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Art. X.—PHYSIOLOGY OF THE FŒTUS, LIVER AND SPLEEN.

The Physiology of the Fœtus, Liver and Spleen. By George Calvert Holland, M.D. &c. &c. *London* 1831, *pp.* 262.

THIS is an interesting volume, the production of a gentleman already advantageously known to the profession as the author of a work published about a year since, under the title of "An Experimental Inquiry into the Laws which regulate the Phenomena of Organic and Animal Life." Dr Holland has a *turn* towards physiological inquiries, and is, undoubtedly, an ingenious experimentalist. In the present, though particularly in his first production, this talent has been conspicuously displayed, and he has thereby established for himself a name, and assumed a distinguished rank among the physiologists of his country. But while we concede to him thus much; while we grant that he has succeeded in reducing many of the phenomena of life to certain laws discoverable by observation; or, in short, that he has applied, in many instances, the true Baconian mode of philosophizing to physiology; we must be allowed to express our opinion that, in the work before

us, to say nothing of its predecessor, with which we have nothing to do on the present occasion, Dr Holland has indulged a little too much in speculation, and has neglected to consult writings of easy access, several of which have been furnished to the medical world by some of his contemporaries at home. From these he might have discovered, that views which he therein presents as novel, are of much more ancient origin than he seems to imagine, and have been opposed and defended by several successive writers.

But on this subject we shall have occasion to refer in a more detailed manner when, in noticing the contents of the present volume, we shall touch on the points to which the above remarks are more particularly applicable.

Dr Holland introduces his subject by an inquiry into the causes that have retarded the attainment of sound principles in physiology. This introductory chapter is carefully written, and contains many sensible remarks. No one, we feel convinced, will refuse to admit with Dr H. that an inquiry into the nature and extent of those causes which impede or arrest the progress of science must be a subject of interesting speculation, not only to the philosopher, but to every one who is engaged in the pursuit, or interested in the advancement of useful knowledge. Such an inquiry, he remarks, if skilfully conducted, by detecting the fallacy of assumed principles and exposing the errors of popular systems, would diminish that undue veneration for antiquity, and that servile reverence for great names which have so frequently prevented the discovery of truth: by thus liberating the mind from the restrictive bonds of prejudice, it would leave us free and unincumbered to pursue the onward course in the paths of scientific research. It is only, he continues, when the fetters of authority and system have been cast off by a powerful and superior understanding, that any great advances have been made in the spacious fields of science, in which, instead of exploring new tracts, the philosophers of our age have generally been content with walking in the footsteps of their predecessors, or, if they have dared to depart from them, it has too often been under the misguiding influence of some imaginary notion, rather than the sure direction of those sound principles which were likely to lead to any valuable discoveries. To this cause Dr H. very justly attributes the slow progress of physiological investigation. On no other principle can we, he thinks, account for the extraordinary fact, that so many centuries elapsed before any knowledge had been

acquired of the circulation of the blood, the connexion between the powers of the mind and the development of the brain, the exact states of the body which promote or retard the generation of animal heat and the true mode in which the fœtus is nourished. These secrets might have been made known, long before the period of their actual discovery, by any man of ordinary capacity; if, instead of being misled by prevailing opinions, he had carefully examined the phenomena which nature presented to his view. Any thing intensely bright is seen more distinctly by the eye through a coloured medium; but the objects of mental contemplation are apt to be distorted and rendered obscure, when received through any other medium than that of plain and simple facts, actually ascertained to exist by careful and repeated experiments. He who recollects this truth will not be surprized at the slow progress of the science of medicine. (p. x—xi.)

Dr H. is of opinion that amongst the moderns, speculation too frequently occupies the place of experiment, that the facts are disregarded in an eagerness to establish some favourite hypothesis; and that the instructive voice of sage experience is not heard amidst the loud exclamations of noisy partizans, contending for the truth of new theories and ever varying doctrines. "The ancients were generally more practical, the moderns are more theoretical; the former may therefore be sometimes safely followed, the latter seldom;" but he admits that it would be dangerous to rely implicitly on either; the ideas of the one being often crude and ridiculous, those of the other visionary or imperfect. Medicine, he contends, has made but little progress, because those who have devoted themselves to the study of it, have, unfortunately, not followed the same scrupulous method of inquiry, nor examined with the same impartial scrutiny the nature of existing doctrines, as the cultivators of moral philosophy, who, in a wise disregard of opinions and systems, however consecrated by age or revered by mankind, have fearlessly pursued their researches into the *arcana* of nature with a spirit of patient, sober and severe investigation, determined to be influenced in their decisions only by reason and fact; and who in consequence have widely extended the domain of that science, and brought to light many important truths.

Physicians have either wholly received or rejected theories after a superficial consideration; and have in either case tended to retard the progress of medical science, which is frequently as much injured

by sweeping away indiscriminately what is supposed to be false, as by adopting, without mature deliberation, what is conceived to be true.

The following extracts will be read with interest.

"Though, amongst the numerous writers on medical and physiological subjects, many have frequently been misled by false theories or too prejudiced an attachment to favourite systems, and none, perhaps, have avoided falling into considerable errors, much useful information, and many excellent observations are contained in their works: for, whilst the experience of one has furnished valuable facts, the imagination of another has occasionally thrown out brilliant and happy thoughts, which, if duly considered, may eventually lead to the detection of gross absurdities, and the establishment of sound principles. The science of medicine has, however, been retarded in its advancement *by the multiplicity of its expounders*. It is more easy to write on this science than almost on any other, and the inducements to attempt it are greater. To compose a work even of a very humble kind on natural or moral philosophy, requires superior intellectual powers, strengthened by much previous study, and long exercised in abstract speculations, or experimental pursuits, whilst such a work, even when creditably executed, does not bring its author either much reputation or profit: but the medical practitioner, with a very ordinary understanding, few acquirements, and but little mental application, may easily compile a treatise on some branch of his profession, availing himself of the labours of his predecessors, and drawing his matter from the existing stores of medical knowledge, which it is only necessary that he should arrange in a new form, and slightly modify, to secure both considerable fame and emolument."

"Another cause, which has retarded the progress of medical knowledge, is *an almost exclusive attention to experiments*.

"However valuable the important discoveries which have been made by a recurrence to experiments, much error has arisen from the false inferences that have been frequently drawn from them,—inferences which, though really the mistakes of erroneous observation, have been regarded as incontrovertibly correct.

"It is very allowable to doubt the truth of propositions supported by argument alone, but it seems an act of bold temerity to call in question facts, or obvious deductions from them, said to be proved by direct experiment; and hence, whilst the former are fearlessly controverted, the latter are generally received with too easy an assent.

"The physiologist, in his researches into the secrets of the animal frame, often forms very erroneous conclusions, in consequence of that narrowness of observation, which is contracted from a long and exclusive attention to experiments. The human body is a

complex machine, consisting of different parts, so intimately connected together, and all so essential to its well-being, that no inference can be safely drawn from a separate examination of one of them, without maturely considering the exact relation which it bears to the rest.

"In endeavouring, therefore, to ascertain the real office of any organ, it should be recollected that, though it possesses individual properties peculiar to itself, it has not an independent existence, but is connected by nerves and blood-vessels with other organs, and is more or less affected, according to its nature and susceptibility, by every cause that produces bodily excitation or derangement. Expertness of hand, and an accurate acquaintance with anatomy, though very valuable acquisitions, are yet of less use to the experimental physiologist than a philosophical enlargement of mind, united to a well-grounded knowledge of the different branches of physical science. To one possessed of these requisite qualities, a single experiment, by leading to the discovery of some general law of the system, may furnish matter for the basis of an original and important theory, whilst it will suggest no new ideas to another, of more contracted mind, and less information, whose whole life is, perhaps, spent in the business of mutilation and destruction, without his discovering one useful or practical truth. Experimental physiology, like microscopical investigation, has a tendency to exercise the hand and the eye, to the neglect and prejudice of the understanding. A habit of observation is indeed acquired, in the investigations connected with this pursuit; but it is observation of a very minute description, confined to the examination of particulars unconnected by any common principle, rather than directed to the scientific arrangement of them under any general heads.

"The pure theorist, though possessed of the most brilliant talent, is too bold a speculator to be implicitly trusted, and the pure experimentalist, who does not possess superior abilities, is scarcely more to be relied upon. The one misleads by his ardent spirit of generalization, the other by his confined attention to particulars; the observations of the latter, founded on these particulars, being often as incorrect as the speculations of the former. It is seldom that minuteness of observation, and the comprehensiveness of mind, which is capable of taking general and enlarged views, are united in the same individual."

With these long extracts we take leave of the introduction, and pass to the body of the work; begging, at the time, our readers to bear in mind the censure Dr H. has passed on the moderns for their proneness to theory, in order that they may see how he follows his own precepts. It is extremely easy for an individual to declaim against theory, and to stand up as the advocate of unadulterated facts; but it generally happens, that when he undertakes to

write even an *experimental essay* on any subject connected with pathology or physiology, he indulges in the same propensity he has so severely censured in others, and presents his readers with more theory than facts. Medical literature furnishes us with innumerable examples of this, among the most conspicuous of which is the course pursued by the celebrated Baglivi; and we are not acquainted personally with a single advocate for pure facts, who is not as much a theorist as those who freely allow the necessity of theory. If the former present pathological facts or physiological experiments or phenomena, they very naturally endeavour to explain their rationale, without appearing to perceive that, by so doing, they theorize, and do exactly what others whom they brand as theorists have done. If they do not perceive it, others do; and they certainly have not the right to assume that their explanations are the only true ones; for, on examination, it will be found that though they may differ from those of the theorist, they are, nevertheless, as speculative, and often as distant as them from the truth. We have not made these remarks to censure Dr H. for amusing *his* readers with a little theory; but merely to prepare *our* readers for an illustration of that inconsistency so often met with in medical writings—a philippic against theory and theorists, followed by a great deal of speculation with few or no facts to support it.

Dr H. remarks that he will not trouble the reader with an enumeration of the different opinions which have been advanced concerning the office of the spleen; for, as he does not propose to attempt a refutation of them in detail, it is not necessary to state them. He notices, however, the opinion of Dr Stukely, whose work was published in 1723; of professor Moreschi of Pavia; of Sir Everard Home, Saunders, &c. and, of course, like every other writer who has a doctrine of his own to propose, finds more or less fault with all of them. He particularly opposes the theory of Sir E. Home, who believes that the function of the spleen is to secrete a fluid necessary for digestion; and he justly remarks that, if that be the function of the organ in question, it is difficult to explain how the excision of the latter in dogs and other animals, as performed by Malpighi, Assolant, Saunders, &c. was not attended with serious effects. With the doctrine of Stukely and Moreschi, Dr H. is rather better pleased. They both inculcated that "*the spleen is an organ appropriated to the digestive function, supplying blood according to its demands.* When the capacity of the stomach is enlarged by the food which it

received, it is supposed to press upon the body of the spleen, so as to diminish the accumulation of blood in the splenic artery, and thereby to augment the action of those vessels which are distributed upon the stomach."

Dr Holland remarks, in reference to this doctrine, that the necessity of a vigorous circulation during the process of digestion can scarcely be called in question; but that if the spleen performs the vital office to the stomach, as contended for by the aforesaid authors, we should find a difficulty in explaining how the latter organ acts when deprived of this auxiliary. This difficulty, indeed, was so well felt by Moreschi, that he gave little credence to the possibility of such an occurrence in the human frame, and observed that this taking place in the inferior animals, cannot be considered as any objection to the action of the spleen in the human subject.

"If authorities were required to prove, that the human spleen has sometimes been excised, it would be easy to bring forward instances. Several cases are on record, where part of the organ was excised, and the remainder was returned without injury to the individual; and it is mentioned by authors of credit, that accidents have occasionally happened, in which the spleen has protruded and has been removed with safety, the vessels having been previously secured by ligatures.* It has also been stated, that in one or two remarkable cases, no spleen whatever was found; and, in many persons, it has been observed so diminutive, as to preclude the idea of its exercising that function with which physiologists have endowed it."

Dr Holland remarks that the physiology of the liver is almost as little understood as that of the spleen. Much, he adds, has been written on the function which it is supposed to perform, viz. the secretion of bile; but it is still undecided whether this be effected by means of venous or arterial blood. If by the latter, for what end is so much venous blood directed to the liver? and, if by the former, the difficulty still remains in accounting for the great quantity of oxygenated fluid which is transmitted to it. "In whatever manner the subject is viewed, according to the established notions of the day, the physiology of the liver is involved in obscurity."

Dr Holland's first object is to disprove the generally received opinion that bile is secreted by venous, and not by arterial blood. His principal reason for adopting this view of the subject may be summed up in the following facts. 1. That if we examine other organs, we perceive the *activity* and extent of their functions are

* Works of Baillie, by Wardrop, Vol. II. p. 235.

proportionate to the quantity of arterial blood which they receive. 2. That it is impossible to discover one organ which is in the least directly indebted to the venous system for the performance of its office. 3. That a case is on record which shows an unusual distribution of the vena portæ, this terminating in the vena cava inferior without its contents having previously circulated through the liver; although the secretion of bile seemed to be as regular and perfect as in those individuals whose organization is natural. 4. To these, Dr H. adds a fact derived from comparative anatomy, viz. that a liver exists in all the *mollusca*, and is very large; but "that this class has no gall bladder. The liver is supplied with blood from the aorta, and there is consequently no *vena portarum.*" "Here," says Dr H. "we observe a secreting organ, whose function is exclusively performed by arterial blood, a fact which strengthens the opinion, that the secretion of bile is the product of arterial and not of venous blood."

Having gone through these preliminaries, and shown conclusively, at least as he supposes, that bile is secreted by arterial and not by venous blood, Dr H. next proceeds to inquire into the functions of the liver and spleen. We present his views on this subject in his own words.

"The function of the spleen, as well as that of the liver, independently of the secretion of bile, is considered a *diverticulum* of the system. If the veins which form the vena portæ had passed directly to the vena cava inferior, a thousand accidents, arising either from mental or corporeal disturbance, would have continually placed the life of an individual in imminent danger. Every passion, whether of an exciting or depressing character, and every general and local disease, if severe, whether chronic or acute, would have been liable to have deranged the lungs and heart. I have already endeavoured to show, that passions of a depressing nature bring the blood in greater quantity than usual from the inferior and superior extremities, and also from the surface of the body to the chest; and I have also stated, that the abdominal viscera participate in this engorgement.* Since the body is continually liable to such changes, baneful effects would follow, unless nature had provided organs, whose situation, function, and organization, enable them to diminish the burden imposed upon those, whose constant and almost regular action is indispensable for the maintenance of life. This object is beautifully answered by the liver and spleen. The organs within the chest must be regarded as possessing vital functions. If the

* See Experimental Enquiry, Chap. xv.

lungs were surcharged with blood, or in a condition approaching to it, the properties and distribution of this fluid would be immediately disordered, and with this primary derangement every part of the body would quickly sympathize.

"The liver and the spleen, from being placed close to the thorax, are calculated to relieve the congested lungs and heart, or rather to protect them from sudden and violent commotions; and are also favourably situated to protect in the same manner the stomach, whose action is scarcely less vital.

"If we investigate the manner in which venous blood circulates in the liver, we shall be convinced that its minute divisions, on this principle, are well calculated to facilitate the object that nature has in view. The vein ramifies through every part of the organ, in the way in which arteries divide themselves: if it had not been thus distributed, the liver would not have contained a quantity of blood equal to what it does at present; nor would it have been retarded, as it is, by the nature of its circulation, in its flow to the lungs, which appears an indispensable provision in order to protect these organs.

"The spleen is, by some, supposed to be formed of vessels; by others, to be chiefly composed of cells; but, whichever opinion we adopt, it is manifest, that its structure is particularly well formed to allow of considerable congestion or enlargement. In those instances, in which the circulation is very much disordered, and in which we have determination of blood to the internal organs, the liver and the spleen are occasionally so much augmented in size, that they cannot be supposed to contain less than many pounds of blood. If these organs had been absent, or incapable, from structure or situation, of receiving an extra proportion, this quantity would have been added to that which is already retarding the action of more vital organs, the consequence of which would be the total cessation of life. We may complain of the enlargement or disorganization of the liver and spleen, but we must remember, that although we occasionally suffer from the diseased conditions of these organs, we are preserved from many acute affections, which would seldom allow man to arrive at maturity, unless the constitution were endowed with instruments fitted to bear oppression. If we consider the temperaments most subject to derangements of these parts, the diseases which affect very much the internal viscera, and the influence of external agents upon the body, we shall probably observe more clearly the consistency of the view proposed to explain the functions of these organs."

"The variations in the temperature of the atmosphere, from heat to cold, are calculated to disorder the circulatory system, particularly in warm-blooded animals. The feathered tribe are very generally affected by the severity of winter, although nature, at this season of the year, provides them with a plumage better fitted than

the one they possess in the summer, to enable them to endure the bleak winds and long cold nights; yet thousands perish from their inability to withstand the inclemencies of the weather: whilst the appearance of those that survive is haggard; their cheerful songs are no longer heard, and their sufferings are indicated by their silence. But, after the genial excitation of a few warm days, they are continually flying about on buoyant wings, and, by their early notes and sprightly motions, intimate the restoration of those vital energies which invariably return with the blooming flowers, and the genial rays of spring. If, however, the warmth and brightness of these sunny days are chilled and overcast by a return of frosty and tempestuous weather, both the animal and vegetable kingdoms again droop. Plants have vessels, through which sap, in the vernal season, is abundantly distributed to the young buds and tender leaves; but if the frosts continue severe, this fluid is repelled or prevented from flowing, and vegetation consequently loses its healthy and natural vigour. The causes which produce these effects are not partial, but general; their influence is modified by one circumstance alone—the peculiar state of the object on which they act.

"The circulation of blood in animals is liable to be excited or depressed by heat and cold in the same manner as the flow of sap in plants; and unless nature had provided organs capable, from their situation and constitution, of readily receiving a considerable portion of the blood that is determined internally, the lungs, the heart, and the chylopoietic viscera would be too much oppressed by an inordinate quantity of this fluid to exercise their usual functions. It frequently indeed happens, although these organs relieve the oppressed state of the animal system induced by cold, that the powers of life are too much enfeebled to continue in operation. But if there were no organs of this kind, the vital parts of the system would be more frequently disordered, and the effects of their derangement would be of a more fatal character. Mangili and Paris, observing the veins and the glands of the throat large and congested in hybernating animals during their repose, endeavoured to account for the phenomenon of torpidity on hypothetical principles, founded on these appearances, which I have proved to be incorrect in the Experimental Inquiry;* having shown that they may be easily explained by taking into consideration the influence of cold on the animal body, and the tendency of the blood to flow to those parts of the system in which it meets with the least resistance. An attention to the same causes will also furnish a satisfactory explanation of the apparently great capacity of the congested state of the veins, as well as that of the glands. Since these are so much affected by the determination of blood to the internal organs, it can-

* See Chap. VII.

not surely be denied that the liver and spleen are at the same time engorged to a degree proportionate to their organic capabilities, which are very considerable; and, if this be granted, it must be admitted, as a necessary consequence, that were there no such organs as these, the whole of that blood, which is transmitted to them, would be received by other parts of the system under circumstances that would most probably destroy the possibility of a renewal of the suspended powers of life. Fishes, from the variations of temperature to which their element is subject, and the different degrees of pressure from the weight of water that they bear, according to the various depths to which they descend, require to be furnished with a liver and spleen, or at least with one of them, in order that their oxygenating, propelling, and digestive organs may not be unduly oppressed by changes occurring in the circulatory system. In short, wherever a sanguiferous system exists, and is liable to be affected by mental or physical causes, or by both, there is evidently an absolute necessity for organs capable of receiving the greater portion of the blood, which is occasionally determined internally in an undue proportion. It therefore seems consistent with analogy and facts, to regard the liver and the spleen as *diverticula*, though in ascribing this office to the former, I by no means intend to question its importance as a secretory organ."

It will be easily found from the preceding extracts, that the author contents himself with asserting what he thinks to be the functions of the liver and spleen, without adducing a single experiment or pathological fact, or a single argument of much weight in favour of his opinion. This, for a man who presents himself as the champion of fact and the opponent of modern theorists, is hardly pardonable. Nor are we less disposed to censure Dr H. for the tone of assurance with which he presents, as original, a doctrine to which he has no more claim than he would have to that of capillary attraction, or gravitation. If Dr Holland will take the trouble to open Senac's edition of Heister's Anatomy, published in 1752, he will find the following passage, which proves that the diverticulum doctrine, at least in what relates to the spleen, is somewhat older than himself. "Schelhammer, and with him Lister, and some of the late English anatomists besides, as Purcell, &c. suppose it (the spleen) to be a kind of diverticulum for the blood, in the more violent commotions." By a reference also to the Edinburgh Medical and Surgical Journal for January 1822, Dr H. will find a paper by Dr Thomas Hodgkin on the use of the spleen, in which the same doctrine is proposed and defended. Finally, by extending his researches into the medical literature of this country, he will discover that in 1807,

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consequently before Dr Hodgkin published his essay, the late Dr Rush advocated, with his usual ingenuity, a similar view of the subject. But on this publication of our countryman we are willing not to insist; since a lecturer on physiology in the *Sheffield* Medical Institution is not obliged to be acquainted with the opinions and works of American physicians.

The second part of Dr Holland's work is devoted to an inquiry into "The Physiology of the Fœtus." It is divided into eleven chapters, treating of the following subjects. 1. The various opinions entertained concerning the nourishment of the fœtus. 2. The primary and secondary functions of life. 3. The nature of fœtal life. 4. The function of the placenta. 5. Temperature of the fœtus. 6. The origin of the liquor amnii and meconium. 7. The nutrition and peculiarities of the fœtus. 8. The brain, the spinal cord, the stomach, the liver, the pancreas, and the intestines, are not essential to fœtal life. 9. On the functions of the liver, the supra-renal capsules, the thymus, and the thyroid glands in the fœtus. 10. The mode of nourishment in the oviparous and ovoviviparous animals. 11. The influence of the imagination of the mother on the development and constitution of the fœtus.

Having devoted a considerable portion of the space allotted to this article to an analysis of our author's views concerning the uses of the liver and spleen, we shall be forced to say very little on each of the topics embraced in the second part of the work before us. The following extract contains a summary of Dr Holland's opinions in relation to the primary and secondary functions of life.

"1. That the principles which regulate the nutritive process in the animal system are of the same kind as those in the vegetable.

"2. That the exuberance of vitality in infancy and youth, and its deficiency in old age, are the effects of the same physical causes, which give foliage and blossoms to the plant in summer, and which prevent the development of them in winter.

"3. That the means which nature employs to effect these various purposes differ only in degree.

"4. That the ascending sap in plants is similar to the chyle in animals, unfit for nourishment until it has been acted upon by atmospheric air; and that the descending sap, from the nutritive properties which it possesses, bears a striking resemblance to the arterial blood, the great source of vital actions.

"5. That the animal system cannot derive nourishment from any substance, unless it passes through the lungs; and still further, that the extent and perfection of assimilation will, in a great measure,

be regulated by the extent and perfection of the chemical changes which the blood undergoes in the respiratory organs.

"6. It is also manifest, that there are no organs of the body, except the lungs, which can, under any circumstances, produce chemical changes in the circulating fluid; any more than the bare trunk is capable of effecting in the tree those similar changes, which in summer are produced by its numerous leaves. The lungs are, therefore, to be regarded as the only cause of animal heat and of those chemical changes which the blood undergoes in passing from venous to arterial."

The author endeavours to show that it is evident we must make a distinction between the embryotic and fœtal life, in accordance with the meaning which has been attributed to these terms. He maintains that whatever is received by the animal and vegetable, cannot be considered as nutritious until it has undergone certain modifications in the lungs, leaves or analogous organs. The light thrown, by this important fact, on the present subject, will, he is sure, enable us to detect the fallacy of a variety of opinions in regard to the principles which regulate fœtal nutrition. "If," he adds, "the foregoing remarks be correct, it cannot be denied that there are two great classes of organs continually employed in maintaining animal existence, which have no other immediate office. The *first* class includes those organs which are incessantly labouring to support the body, as the stomach, the liver, the pancreas and the lungs. The *second*, the whole of the excretory organs which contribute indirectly towards the proper action of the former. The first may be regarded as causes, the latter as effects."

After remarking that the object of the first class of organs is either directly or indirectly to form chyle, or rather arterial blood; that if this fluid were received from without the system, the lungs, the liver, the stomach, and the pancreas, and indeed all those organs which promote the elaboration of food, would be entirely superfluous, and that there would be no occasion whatever for the brain or spinal cord, as connected with the function of respiration. Dr Holland combats the opinion that the fœtus is nourished by means of the amniotic fluid received by the mouth, as well as that of Saint Hilaire, who supposes, that the amnios contains a respirable gas, which is constantly absorbed by veins in contact with the fluid, and that the only substance which the fœtus requires for the development of its numerous organs is oxygen. On the latter subject he remarks:

"The capillaries of the skin, according to his fanciful hypothesis, are filled with venous blood, which, from its favourable situation, readily absorbs oxygen from the amnios and becomes arterial. If the adult were possessed of an arterial and venous system, but deprived of the contributions of the digestive organs, would the exercise of the respiratory function increase or maintain the muscular powers of the body, cause a deposition of fat, and produce the various actions of the animal economy? Such an idea would lead one to suppose that the only difference between arterial and venous blood is in the former containing oxygen."

"That the amniotic fluid contains a respirable gas, is a fact proved, according to the statement of Geoffroy Saint Hilaire, by experiment. Is it not more than probable, that analytical processes to ascertain the exact composition of a fluid, discover not only what it possesses in its natural condition, but likewise disengage gases that were previously in combination with its different chemical principles? If it were even allowed, that the amnios contains a respirable gas, insuperable difficulties are connected with its production and mode of action. It is imagined to be taken up by the pores of the skin, which act like so many tracheas. If these have sufficient energy to absorb, the skin must also be able to secrete: the two functions must coexist. What becomes of the secretions? As they are necessarily poured into the amniotic membrane, they must continue to accumulate from the commencement of fœtal life to its completion; and therefore, it is improbable to suppose, that a pure oxygenated principle could exert any influence under such circumstances."

In respect to the opinion almost universally held by physiologists, that the placenta is capable of oxygenating the blood it receives, Dr Holland very justly remarks, that the whole investigation resolves itself into an inquiry concerning the analogy existing between the lungs and the placenta. It has already been shown, he says, that the lungs of animals and the leaves of trees answer similar purposes. Nutritious matter, the product of other organs, is conveyed to both, in order that they may undergo certain chemical changes. These are produced by atmospheric air, and by the ejection of what is excrementitious. We have not the least evidence that actions of this kind can ever take place unless the organs which effect them have the same relations to the external world, as the lungs of animals or the leaves of plants. Dr Holland also combats and refutes Dr Lee's new hypothesis, that the liver of the fœtus secretes an albuminous fluid which is absorbed by the smaller intestines and contributes to the support of the system, and next proceeds to inquire into the functions of the placenta. On this subject he enters at length; but

we have only space to state the conclusions to which he arrives. 1. The fœtus derives its blood exclusively from the mother. 2. The placenta is an organ incapable of producing chemical changes in the blood. 3. The fœtus has not in activity any organs that can in the least oxygenate the blood it receives. 4. Venous blood cannot support organic life.

His views of the materno-fœtal vascular connexion may be gathered from the following extract.

"The venous blood transmitted by the fœtus to the placenta, is absorbed by veins and conveyed to the lungs of the mother; the arterial blood derived from the uterus, is absorbed by the umbilical vein, and flows to the heart of the fœtus. We are not capable of forming an accurate idea of the number or nature of those powers which cause, in either case, the return of blood to the heart. It is quite clear, however, that it flows to the placenta from two opposite points, and that it is absorbed and carried to the mother and fœtus in a similar way, although not precisely the same, in both instances. The views of Barry go far towards explaining the circulation of venous blood in viviparous animals after birth, but do not account for its circulation in the fœtus.

"It was stated by Vieussens that the red globules of blood were not absorbed by the umbilical vein. The same absurd doctrine was also taught by Monro, Primus. 'The fœtuses of viviparous animals,' observes the latter, 'have their red blood from the same source that chickens in eggs have theirs, the action of the heart and the vessels in their body and secundines.'*

"If oxygen, and that organic construction universally belonging to the respiratory organs of animal and vegetable life be wanting, the process of oxygenation cannot possibly proceed. The simple action of muscles, or vessels, on the particles of blood, cannot create an arterial fluid.

"I have already alluded to the impossibility of the placenta performing the office of lungs. If a connexion between the placenta and uterus either of a direct or indirect kind be denied, it is impossible to account for the origin of fœtal blood. The fœtus possesses not the organs necessary to produce it, and, therefore, it must necessarily pass from the uterus to the placenta."

On the subject of the origin of the liquor amnii and meconium, Dr Holland indulges in more theory, and reasons more on assumption, than could have been expected in one who inveighs continually against theorists. Take the following as an example:

"If we allow that the amnion secretes, the activity of its function will be admitted to be proportionate to its vital energies; but this

* Edinburgh Medical Essays, Vol. II. p. 301.

activity cannot rationally be supposed to equal that of the well-known powers of the skin, which are engaged, in every period of life, in removing from the surface of the body, perspirable matter. The physiologist may very safely infer, that the amnios is secreted by the skin, from the fact, that such secretion is its natural and unceasing function, and is, moreover, a necessary consequence of its organization, and the distribution of blood to it. That it is secreted by the amnion, is very improbable. If the fœtus had been placed in a medium of a temperature much lower than its own, transudation from the surface of its body would have been almost wholly prevented; but, as the fluid, in which it is immersed, is of the same temperature as itself, such an effect is rather facilitated than impeded.

" ' Deux causes,' observes Edwards, ' influent principalement sur ces deux fonctions [absorption and transudation]: la quantité de liquide contenue dans le corps, et la température de l' eau dans lequel il séjourne. Plus il y a de plénitude, moins il y aura d' absorption; plus la température de l' eau est basse, moins il y aura d' exsudation. Dans la limite extrême de 30° cent. le contraire a lieu; les pertes l'emportent de beaucoup sur les gains, parceque la transudation prédomine sur l'absorption.'*

" The liquor amnii augments with the development of the fœtus. If this fluid is exuded from the skin, its gradual increase is in perfect accordance with those principles which are supposed to explain its origin. The vital actions of the fœtus, and a more extended surface for secretion, augment in proportion to the progress of gestation."

In relation to the meconium, he remarks:

" It was stated in the preceding pages, that there is a great difference in those causes, which excite the action of the skin and the functions of the chylopoietic viscera of the fœtus. The latter, for their operation, are dependent upon the digestive process, or are particularly influenced by it. The action of the former is very much increased by the general exercise of the internal organs, as is particularly evident after birth; but it seems capable of continuing even during the immersion of the fœtus in the amnios, when the internal organs are inactive.

" Although there is this striking difference, it is only in degree. The mucous membrane, the pancreas, and the liver, receive, during fœtal existence, arterial blood, in order to render their organization complete; and although they are not stimulated into extensive action, as at a subsequent period, by the digestive process, exercise, and other causes, yet it is impossible for them to be regularly supplied with sanguineous fluid without certain effects being produced,

* De l' Influence des Agens Physiques, p. 352.

indicative of the partial activity of their functions. The meconium, the bile, and other substances, are then the production of certain organs thus partially exercised."

"The meconium appears then to be nothing more than the admixture of the different secretions of the abdominal viscera, and is not, in any degree, the result of a regular digestive process."

It is known, that the opinion of physiologists in respect to the nature of the blood carried from the placenta to the fœtus, differs; some, as Bostock and Jeffrey, believing that it is arterial; while others are opposed to this conclusion, or consider it doubtful. Dr H. relates an experiment which, he thinks, settles the question in the affirmative. The following was the method employed by Dr Jeffrey: he took part of the cord and dissected away the gelatinous substance of it, until he had laid bare the vessels, when, on puncturing them, he observed that there was a difference of colour between the blood in the vein and the arteries. Many physiologists, as Dr Holland observes, are said to have failed in this experiment. From the tedious preparation which it required, he (Dr H.) did not succeed to his full satisfaction. But on taking part of the cord, as soon as the child was born, around which he had previously tied a ligature, about two inches from the free extremity, and cutting this with a sharp scalpel, in order to make an even surface, he very clearly discovered, on pressing the cord from below upwards, blood of a very different colour, flowing from the umbilical vein and arteries. If the experiment does not fully succeed in the first instance, Dr H. directs a ligature to be tied still farther from the end, and, having made a fresh surface, to press gently from below upwards. Sometimes a large drop of florid blood is observed to stand directly over the umbilical vein, and another dark coloured over the arteries, without their being in the least mingled with each other. In this case, the difference between the two is so striking that no one can fail to observe it.

Dr Holland states that it is an interesting and important inquiry whether the whole of the fœtal blood flows through the umbilical arteries to the placenta in the same time as the whole of the sanguiferous fluid of the mother circulates through the lungs, viz. in about three minutes. If such be the case, he remarks, the fœtus will have the whole of its blood renewed as frequently as that of the maternal system. He lays it down as a well ascertained fact, that there is the same relation between the heart of the fœtus and the

quantity of blood belonging to its body, as there is between the heart of the adult and the quantity of blood circulating in its system; and thinks that from this we shall be able to estimate the difference between the properties of fœtal and maternal blood.

"At every contraction of the left ventricle of the heart in the adult, a certain quantity of blood is expelled, the whole of which must inevitably return to the right auricle and be sent to the lungs, before it can arrive at the point from which it departed. This revolution is supposed to be performed in about three minutes. The blood transmitted at every contraction of the left ventricle of the heart of the fœtus, does not return, in the same manner, to the right auricle; one portion is sent to the internal iliacs, and conveyed from them to the placenta, by means of the umbilical arteries; another pursues its regular course, circulating from arteries into veins, until it arrives at the right auricle, where it is blended with the arterial fluid derived from the umbilical vein which terminates in the vena porta and vena cava inferior. This peculiarity in the circulatory system of the fœtus appears calculated to produce blood of an inferior quality."

"The whole mass of the blood of an adult circulates throughout the system once every three minutes, because the heart contracts about seventy-five times per minute; if it contracted oftener with equal or superior energy, the same quantity of blood would complete its revolution in considerably less time. The heart of the fœtus, instead of contracting seventy-five times per minute, contracts at least one hundred and twenty times. In considering this subject, we must not forget that there is the same relation between the heart of the fœtus and the quantity of blood belonging to its body, as there is between that of the adult and the quantity of blood circulating in its system.

"It is therefore obvious, if the fœtal heart contracts one hundred and twenty times per minute, that the complete circulation of the blood in its system will be effected in almost half the time of that of the adult, and consequently, although venous blood is always mingling with the arterial fluid of the umbilical vein, the blood of the fœtus cannot be particularly deteriorated from this circumstance, because the whole mass is frequently renewed by the very numerous contractions of the heart. If this contracted seventy-five times instead of one hundred and twenty, the relation between it and the mass of the circulating fluid remaining the same, the arterial qualities of the blood would be diminished almost one half."

We have devoted so much space to an examination of the contents of the principal chapters of the work before us, that we are compelled to leave the others unnoticed, and to terminate here this article. We cannot, however, take leave of Dr Holland with-

out bearing testimony to his ingenuity, acuteness, and sound criticism; and expressing once more our regret at his disregard of his own judicious precepts in favour of a simple and philosophical investigation of facts, and at his too free indulgence in theories and hypothesis; circumstances we should not probably have noticed so particularly, had he not himself borne so hard on modern physicians for their theoretical propensities. There is an old saying that they who live in glass houses must throw no stones. It would have been better for Dr Holland not to have attacked his contemporaries for their partiality to speculation. Had he not done so, he would have been spared many a severe retort, and have enhanced the interest of his work, which, we doubt not, is somewhat diminished by the effects of the comparisons every reader must naturally make between the precepts it contains, and the manner in which they are followed.

Art. XI.—DELIRIUM TREMENS.

A Practical Essay on Delirium Tremens. By Andrew Blake, M.D. *Member of the Royal College of Surgeons, and Surgeon to his Majesty's Seventh Regiment of Dragoon Guards. London,* 1830, *pp.* 68.

Much has recently been said and written on the subject of delirium tremens, and much diversity of opinion has prevailed, and still prevails, among different writers, as to its essential nature and proper methods of treatment. While some have given it a place among nervous diseases, others have considered it an inflammatory affection, each class addressing their remedies to the particular system they have supposed to be implicated; a third portion of the profession candidly confess that they are entirely ignorant of the true pathology of the disease, and are content to employ those remedies which they believe the accumulated experience of observant practitioners have decided to be most efficacious.

With this contrariety of sentiment on a subject so important, it was truly gratifying to peruse the little volume now before us,

which comprises, in the short space of sixty-three pages, the most accurate delineation and systematic arrangement of the phenomena of the disease that we have yet seen, while it indicates some very important practical rules to guide us in its successful management.

Its author, Dr Blake, is attached to the medical department of the British army, under the superintendance of the distinguished Sir James M'Gregor, by whose special direction his essay was published, and directed to be distributed among his brother practitioners in the same service.

Having had tolerably extensive opportunities of testing the principles laid down by Dr Blake, from our own personal observations, we shall attempt, on the present occasion, a pretty full analysis of his views, with such comments as our own experience may have suggested, and we may hope that the importance of the subject will justify us in the effort to draw attention to his useful work, which, we believe, has had but a limited circulation in this country.

The first two pages of the treatise are occupied with a brief but pretty acute analysis of the different appellations assigned to the disease by different writers, all of which Dr B. considers liable to objections, and proposes, as the most appropriate, the title of "Erithismus Ebriositatis;" without occupying time in noticing the reasons on which this term is founded, or the objections to those which exist, we shall pass it by, preferring, ourselves, to adopt the name of delirium tremens, which appears to have been generally sanctioned, and which stands (somewhat inconsistently perhaps) at the head of Dr B.'s treatise.

The disease is classed, by our author, in the nosology of Cullen, class neuroses, order adynamia, which is supported by his definition of the affection, viz. "indirect general debility succeeded by a morbid increase of action in the brain and nervous system, which is attended with delirium, and terminates generally either in sleep and subsequent health, or in death from collapse or effusion on the brain."

After making some preliminary remarks on the prevalence of the disease among the British soldiers in the West Indies, where he was then situated, and enumerating the causes of its frequent occurrence, our author proceeds to give us an account of his experience and observation, during a residence of upwards of five years in the West Indies, in the capacity of physician to a British regiment.

He states that he was early impressed with a belief that the au-

thors who had written on delirium tremens had not sufficiently explained all its phenomena, and had altogether omitted its division into *distinct and uniform stages*, a circumstance which he considers of great importance in the application of remedial agents. He thought he discovered that they had overlooked some of its pathological characters, as well as "many essential points in the order of treatment."

Impressed with this conviction, he commenced a series of observations in reference to the order of occurrence of the phenomena of the disease, which resulted in dividing it into three distinct stages. This division is supported by a table given in the appendix, in which the duration of each particular stage and the periods occurring between them, as noticed in a number of cases, is indicated; the opinion which Dr B. formed from these observations, induced him to believe that delirium tremens is a disease "*sui generis*" somewhat similar in its course to a paroxysm of ague, to which indeed it bears no small analogy, being to the brain and nerves what intermittent fever is to the arterial system.

This division of the symptoms of delirium tremens is novel, and, we believe, entirely original with Dr B. It is the result, as far as we have been able to discover, of close and accurate attention to the varying states of the system in this intricate affection; and, if true, is rendered highly important both in assisting our diagnosis in the disease, and in directing our attention to those particular pathological conditions, for which particular substances, *judiciously modified*, are the only remedies. As an evidence of its correctness, we can only say, that in upwards of sixty cases of the disease which have fallen under our notice since our attention was directed to an observance of its stages, we have rarely been at a loss in satisfying ourselves as to the particular conditions of the system corresponding to the stages as described by Dr Blake, though as we shall hereafter have occasion to remark, we differ from him in some minor points, which enter into his description of them.

After making these general remarks on his new views in relation to a proper arrangement of symptoms, our author presents us with some excellent diagnostic signs, to enable us to discriminate the numerous insidious modifications of this dangerous affection. These may be summed up in an enforcement of the precept of paying strict attention to its distinct and uniform stages, (modified by habits, tem-

perament, &c.) which Dr B. believes will always insure us a correct and unerring diagnosis.

One or two pages are occupied with strictures on the views of other writers on delirium tremens, in which even the enlightened Baron Dupuytren does not escape. Passing by these personal criticisms incident to authors, we proceed to an examination of more important matters.

First, we shall introduce to our readers Dr B.'s description of the disease, and here we cannot do him justice without quoting copiously. In speaking of the first stage, he says:

"The first distinct indications of this disease usually appear in the following order: a peculiar slowness of the pulse, frequently as low as forty-four in a minute, attended with coldness of the hands and feet, which, being generally bedewed with moisture from the effect of evaporation, present a clammy icy feel, these are preceded or accompanied with symptoms of general debility, and a diminution of temperature, owing, of course, to the defect of sensorial or nervous influence; cramp in the muscles of the extremities, with giddiness, nausea, and occasional vomiting, are also troublesome. The bowels are generally open, but sometimes the contrary, nervous tremor of the hands and tongue, the latter being moist, and but slightly furred, form also in most instances prominent features in this stage; all these are accompanied with dejection of spirits, frequent sighings, and oppression of the præcordia, anxiety and depression of the countenance, with short and interrupted slumbers."

This extract conveys to us a very accurate description of the premonitory signs of delirium, or the first stage of delirium tremens, though we must differ from Dr B. on one or two particulars. We have occasionally met, though rarely, with the "peculiar slowness of the pulse," which he has noticed; more frequently we have found the pulse nearly natural as to frequency, full and soft; sometimes we have found it, in this stage, voluminous and bounding, such a pulse as would indicate, under other circumstances, the use of the lancet. The clammy moisture of the hands and feet is particularly striking in the forming stage, though we have seen it cover the whole surface, before any symptoms of delirium were manifest.

The time, according to our author, between the abstraction of stimulus and the appearance of the first stage is uncertain, and depends on the nature and habits of the subject.

This fact we have had frequent opportunities of witnessing, having known all the symptoms to commence in twelve hours after a de-

bauch, in some instances, while in one rare instance, an interval of six days supervened; we should suppose that from twelve to thirty-six hours might be stated as the average period. Dr B. proceeds to describe the gradation between the close of the first, and the full development of the second stage, which is thus expressed:

"As the second stage approaches, the countenance gradually assumes a wild aspect, the patient becomes restless, with an apparent anxiety to perform, immediately, whatever you desire, or even to anticipate you in what he thinks you are about to require. I have generally been able to prognosticate approaching delirium by a careful discrimination of this last symptom."

This "last symptom," in the first stage of Dr B., is particularly striking, and we presume every one who has seen much of this disease will recognize it. We were struck with it before we saw it noticed by Dr B., although we did not appreciate its importance as a diagnostic symptom.

The duration of the first stage is various, and is governed, according to our author, by the state of the constitution, and previous habits of the patients. In a young and vigorous subject, where the resources of nature are capable of producing speedy reaction, it will of course terminate earlier in the second stage than in those individuals broken down by repeated attacks of the disease.

The second stage, or the occurrence of nervous reaction, is thus described:

"When the second stage is established, a train of symptoms, consonant with high nervous irritation, gradually follow; mental alienation, in various forms and degrees, is developed, and, with this, an exertion of the nervous power, to re-establish the state of energy, or rather excitement, to which the system had been habituated, and which existed previous to the cessation of the application of diffusible stimuli to the nervous system through the medium of the stomach; the heart and arteries, also, at length sympathize; the pulse becomes quicker, though it continues small, and the heat of the surface increases; there is, however, throughout the disease, a marked difference between the temperature of the hands and feet, and the rest of the body, the former retaining, in some degree, the icy and clammy feel already spoken of, while the rest of the surface may become even hot and dry. If this state continue long, without amelioration, a clammy sweat pours from the skin, accompanied with excessive irritability; the disorder of the mind increases, and objects of the most frightful forms present themselves to the imagination of the patient, and in positions in which, as Dr Pearson says, 'it is physically impossible they can be situated.'"

Our author then gives several cases illustrating some of the peculiar forms of hallucination which he had observed; these are curious and interesting, and might almost fill a volume, were they presented in all their diversified and frightful characters.

But before proceeding further, let us glance at Dr B.'s description of the second stage, which, as far as we have been able to discover, is very accurately drawn, corresponding closely with our own observations. But then we must differ from the Doctor in regard to the pulse; as far as our observations on this point have extended (and they have been particularly directed to it), the pulse, even in the height of the second stage is, in most instances, full, slow, and soft, as in the first, and it is not until near the close of this stage, that we have observed it to become small and very frequent; when this has occurred we have considered it a very dangerous symptom, and our fears have been too often realized. Indeed, we have been particularly struck with the slowness and softness of the pulse, even under the most intense cerebral irritation.

To proceed with our author's description of the disease:

"From the moment delirium is fairly established, the patient is deprived of the restoring solace of 'balmy sleep,' and is harassed by obstinate pervigilium, which may be looked upon as a pathognomic symptom of the second stage of this disease. During all this the appearance of the countenance becomes particularly anxious; the tremors of the hands and tongue generally continue, and the fur on the latter increases; the urine, at the same time, becomes scanty and pale, and the bowels rather confined, or, if relaxed, the stools are dark coloured; the pupils, at this period, are contracted, but without *intolerance of light.*

"When these symptoms have continued for one, two or three days, and in a few instances even beyond that period, where a fatal termination is not about to take place, I have almost always observed their gradual mitigation, attended with a strong tendency to sleep, exhibited by yawning and drowsiness, which, as soon as it supervened, became profound, and lasted from six to eighteen hours, and occasionally longer; constituting the third stage of this nervous paroxysm, or general relaxation of the nervous energy, similar to the capillary relaxation of the arterial system, which takes place during the sweating stage of ague, and to which, in almost every instance that I have seen, convalescence has succeeded."

Dr B. has never seen cases of this disease in which delirium has lasted over six days, as mentioned by some writers. It has fallen to our lot to witness one case of paroxysmal mania now under cure, which has occurred at intervals for the last six months, and another

of permanent fatuity, which are the sequela of severe attacks of delirium tremens.

Such occurrences are, however, rare, so much so as to cause surprise that so little permanent or organic mischief should ensue, after the most violent and repeated attacks upon an organ so highly excitable as the brain.

In speaking of the unfavourable termination of the disease, our author adds:

"When the third or sleeping stage does not supervene in due course in this disease, and the general symptoms increase in violence, the mind appears to labour under excessive irritation, and the patient makes violent and frequent struggles, which are attended with copious perspiration; this, as the disease advances and the strength fails, becomes deadly cold; the pulse, at the same time, increases in rapidity, becomes thready, and declines in vigour; the tremors of the hands also augment, and extends to the whole frame, and approaches to subsultus tendinum, though it does not exactly resemble that affection; it seems rather allied to nervous rigours, which I have sometimes witnessed in violent cases to precede the approach of the sleeping stage, and which are very alarming, particularly to those unaccustomed to meet with them, as by such persons they are liable to be taken for rigours, indicative of internal mischief.

"According as all the symptoms of the malady increase, the pupils become exceedingly contracted; the countenance is pale and anxious; the tongue brown and dry in the centre; the patient talks incessantly and with astonishing rapidity, and will be perhaps affected with pseudoblepsis, or carpologia; the delirium then becomes excessive, and continues till a short time before death. In one case, at this stage, the mind was so diseased, that after having desired the patient to put out his tongue, he continued for near half an hour drawing it in and putting it out alternately, in quick succession, whenever I looked at him, from a deranged association of ideas; there is generally, however, a calm previous to death, which, in most instances, takes place without a struggle, though, in some instances, it may be immediately attributable to the supervention of an epileptic fit."

To this very minute and accurate delineation of the symptoms of this formidable disease, traced through their various grades of intensity, and resolving themselves, in the one case, in "sleep and subsequent health," and in the other, in death "from collapse and effusion in the brain," we feel disposed to add one symptom which we have not seen noticed, but which has struck us very forcibly as indicating a near approach to death; we allude to a disposition manifested in patients, in the last stage of delirium tremens, to pick

at small imaginary objects, pieces of money especially, which they believe to be immediately contiguous to them; we know not whether it be accidental or not, but this form of hallucination has occurred in almost every fatal case of the disease which has fallen under our notice.

We have now followed Dr Blake through his description of the stages of delirium tremens as far as his observations have enabled him to trace and define them. We know not what our readers may think of his peculiar views; we would advise them carefully to test them by personal experience; for ourselves, we are satisfied of their correctness, and have derived great benefit from their exposition.

To use our author's own expressions in summing up his observations on this head.

"Such are the general symptoms of the three stages of this complaint as they presented themselves to my observation: the first, or the stage of exhaustion, I would compare to the cold stage of ague; the second, or that of nervous excitement, to the hot fit; and the sleeping, or third stage of this disease, to the sweating stage of intermittent fever; thus completing the analogy between the arterial and nervous paroxysms of the two diseases."

Dr B. next presents us with his views on the pathology of the disease, the causes which produce it, and its diagnostic symptoms. As far as we understand him, he believes it to be an affection altogether of a nervous nature, a predisposition to which is established, by the habitual and excessive use of ardent spirits; which have a peculiar action on the nervous system, bearing an analogy to the action of mercury on the vascular system; this predisposition may be induced, according to our author, by the long continued abuse of any of the diffusible stimuli, such as opium. No cases of this kind have fallen under his notice, though he believes some are well attested. On this point we must differ from the doctor; we believe that opium is a peculiar stimulus, producing a specific effect on the nervous-system, and inducing, by its habitual abuse, a specific disease. This opinion is founded, not on theory, but observation: it has been our lot to witness one well marked case of disease, produced by cessation from the habitual and immoderate use of opium, which differed in many essential points from delirium tremens. We saw, in this instance, none of the tremors or other characteristic symptoms of the first stage, nor the hallucinations or violent muscular action of the second, nor all these increasing in intensity in the third; on the other hand, the patient presented, throughout the attack,

symptoms of nervous exhaustion, without reaction, with a *peculiar* and most distressing form of delirium; nor did sleep produce any mitigation of the symptoms.

Our author's theory as to the causation of the disease, though perhaps not novel, is well expressed. It is as follows:

"The immediate or occasional cause of the disease appears to me to be in general the sudden cessation, if I may use the expression, of the application of accustomed stimuli, through the medium of the digestive organs, to the nervous system, in consequence of which cessation, the nervous power gradually sinks to the lowest ebb; and in endeavouring to rally and re-establish the lost equilibrium between it and the vascular system, its efforts exceed the exhausted resources of the sensorium, the consequence of which is delirium, &c."

After spending some remarks in combating the doctrine of absorption of alcoholic molecules as the cause of the symptoms of delirium tremens—a doctrine totally incompatible with our author's views—he proceeds to make a few remarks on post mortem appearances. His conclusions on this head may be understood, from the following short extract:

"When this disease terminates fatally, it does not seem to me to be owing to venous congestion, as the late much lamented Dr Armstrong asserts in his valuable work, or to inflammation of the brain, as Dr Clutterbuck maintains in his lectures in the Lancet, Vol. II, p. 376.

"I would rather ascribe it to serous effusion within the cranium."

In support of this opinion several dissections are related, which appear satisfactory to Dr B. We are disappointed, however, that he has not more fully examined this subject, and furnished us with some additional facts. In our dissections we have found both venous congestion and serous effusion; but from the different conditions of the brain in which these appearances may ensue, as well as from other circumstances, we have not considered them conclusive. In this dilemma, we have believed that death was occasioned in this disease by a peculiar deleterious action on the nervous masses, not cognizable on dissection; by one of those innumerable and diversified grades of nervous irritation, as subtle in its morbid actions, as is the nervous influence in its regular operations.

The diagnosis in this disease is not difficult, provided strict attention be paid to the symptoms which it presents, and the order of their occurrence, which will be found essentially to differ from those of any other affection. Dr B. treats of this subject at large, and

points out the discriminating marks between the delirium attendant on this complaint, and that of various other diseases. We shall not follow him through this labyrinth, but refer to what we have already presented on this head.

The prognosis of this insidious affection is somewhat difficult. According to our author, we shall be materially assisted in forming it, by considering the previous habits and constitution of the patient. Thus in a young and vigorous subject, we need scarcely fear an unfavourable termination under judicious management; whereas, in an individual broken down by repeated attacks of the disease, we may justly fear the inadequacy of the powers of the system to restore its healthy actions. We cannot but consider this point of prognosis as doubtful, having seen a patient recover from the fifteenth attack of delirium tremens.

The state of the pulse Dr B. considers "a comparatively sure guide" in forming our prognosis; when its frequency did not exceed one hundred strokes in a minute, he looked upon the patient, generally speaking, as safe; "but when" says he, "from its rapidity and the tremor of the hands it could scarcely be counted, I considered him in imminent danger."

Our author then proceeds to give us the result of his ample experience in the treatment of delirium tremens; his plan differs from that of all other writers, not in the remedies employed, but in the method of their administration. Thus he insists on keeping constantly in view the state of the patient's system, or the *particular stage* of the disease, and in carefully adapting our remedies to the varying condition of the animal and vital powers; remembering also that delirium tremens is very apt to be complicated with other diseases, and that its symptoms are materially modified by the temperament and habits of different individuals.

His treatment then is adapted to the different stages of the complaint, and the remedies appropriate for each are separately considered.

Let us follow him through an account of his treatment in the first stage.

"During the first stage much may be done, the disease may even be cut short, and a prevention of the second stage effected, under proper management; that is, by attending sufficiently to the precept, "veniente occurrite morbo;" thus, if slight gastric derangement, attended with nausea and occasional vomiting exist, I have found effervescent draughts, in which there were ten drops of lauda-

num, administered every second hour, with emollient, and if necessary anodyne enemata, very efficacious in the intermediate hour. I have been in the habit of giving a little rum with warm water and sugar, using the tepid or even the cold affusion, according to the strength of the patient and the probability of the production of reaction; thus in a young and healthy subject, I would have recourse to the cold affusion and "vice versa," but if in this stage the warm bath should be preferred, it ought not to be of a temperature high enough to induce debilitating effects. I would recommend that anodyne frictions at the same time be made to the epigastrium, and that the head should be shaved and well rubbed with strong volatile liniment, so as gently to stimulate the surface of the scalp; a blister to the nape of the neck is also of advantage in assisting to excite action in the immediate vicinity of the brain."

Dr Blake is theoretically opposed to the use of emetics in this or any other stage of the complaint, fearing their debilitating effects. Where nausea and vomiting do not exist, instead of effervescing draughts, he gives the "camphor mixture with twenty or thirty drops of æther, and ten of Tr. opii." He also allows soup, arrow root, sago, or any other mild nourishment in moderate quantities. He directed rum, as the accustomed stimulus of those who fell under his care; in other instances wine, porter, &c. would be advisable.

We have no doubt that the practice above detailed would prove highly useful in many *mild* cases of delirium tremens in its forming stage, but in violent attacks of the disease, such as have frequently fallen under our notice, we believe it not sufficiently *active*. Thus a number of cases have occurred to us, where the nausea and vomiting have been excessive—the stomach rejecting every thing that was presented to it: in these cases we have found effervescing draughts totally inefficient, and have resorted to more active measures. Our plan has been to give anodyne enemata, frequently repeated, and to apply a large spice plaister* over the epigastrium. As soon as the irritability of the stomach is allayed, (as it usually is by this course), we commence with small quantities of nutritious and stimulant articles, frequently repeated, and gradually increased. The remedies best adapted for this condition we have found to be highly seasoned soup, or beef tea, with porter, and an aromatic powder consisting of

* The spice plaister is a compound of equal parts of cloves, cinnamon and red pepper, made into a cataplasm by means of rye meal, brandy and honey. The brandy should be well heated, and the plaister applied as hot as practicable. This prescription was originally recommended by Dr Parrish, and is at present much used by him, particularly in cholera.

equal parts of valerian, cinnamon and cloves; say from five to ten grains of each, administered every two, three, or four hours, according to circumstances; and these stimulant and nutritious articles, by supplying the place of the accustomed stimulus of the patient, (a cessation from which it will be recollected has given rise to the symptoms), have often succeeded in our hands in allaying the most distressing and exhausting vomiting, in controlling the nervous tremors, which sometimes prevail to a great extent, and by their continuance, modified of course according to circumstances, in preventing the accession of the stage of nervous excitement.

We have occasionally employed the emetic practice, as first recommended by Dr J. Klapp of this city, and we have seen the second stage prevented by the timely administration of an emetic; we decidedly prefer the other course, however, believing it to be better adapted to the generality of cases.

Dr B. strongly reprobates the practice of giving large doses of opium indiscriminately in this disease. He believes such a recommendation has its origin in an ignorance of the *true nature* of the disease and the *stages* which it observes.

His reasons for the adoption of the practice which he details for the first stage, are thus cogently stated.

"My object at this period, or in the first stage of delirium tremens, would be to raise the lowered scale of the nervous power, not by overwhelming it with large doses, but by the gradual effect of the administration of diffusible stimuli, aided by opium, in quantities calculated to allay irritation, without at the same time increasing debility. The means here mentioned should be persisted in, with modifications, as the symptoms increase or diminish, and with a view to the general principles already laid down, which, if properly attended to, will in many cases cut short the disease, by averting the second stage and inducing sleep, in the same way as the warm bath on one principle, and bleeding on another, used during the cold stage of ague, may either bring on the sweating, and thus prevent the accession of the hot stage, or by relieving congestion, prevent the supervention of either, and thereby at once shorten the paroxysm.

To proceed to the treatment adapted to the supervention of nervous excitement, or the second stage of this disease—our author remarks:

"Should, after all our efforts, the second stage, or that of nervous reaction supervene, we must not be discouraged, but then act on the principles generally recommended, viz. the administration of full doses of opium, taking care at the same time to support the efforts

of the system by the assistance of diffusible stimuli; and anti-spasmodics, such as brandy, rum, wine, porter, and camphor or musk mixture, with æther is directed in the first stage; to these means I have been in the habit of adding calomel and Dover's powder, say two grains of the former, and six of the latter every two hours, until the system became affected or the disease yielded. Mercury may have been of service here indirectly, owing to its deobstruent and equalizing effects, as well on the circulation in general, as on the secretions."

Dr B. also approves of the warm bath in this stage; and if constipation prevail, he considers croton oil as the best purgative, believing, that in addition to its purgative effect, it exercises a favourable influence over the nervous system. This treatment must be continued, until a favourable crisis is about to ensue: at this period Dr B. thinks it very important "not to interfere too much with the intentions of nature, by over doses of medicine, particularly of opium," and he thinks that after "a fair quantity" of that active drug has been administered, we should be very careful in its further use, especially in frequently repeated doses.

We regret that our author has not been more explicit in telling us what he means by "full doses" or a "fair quantity of opium," particularly as he considers it our main stay in the stage of nervous excitement. On this matter there is a great difference of opinion; for our own part, when the nervous paroxysm is fairly formed and the case is severe, we have considered, generally speaking, ten grains of opium a full dose, and have not hesitated to repeat it every three or four hours, until a decided effect was produced. If after continuing this practice for twelve or fourteen hours, we find the symptoms increasing, (which by the bye is a rare occurrence) if the pupils become more contracted, the pulse more frequent, and the perspiration is found issuing from every pore, we have then considered that we have given a "fair quantity of opium" and have desisted. The plan of giving mercury in this disease is not novel; we have seen excellent effects produced by it, particularly given in the manner indicated by Dr B. We have never tried the warm bath, not having the conveniences; but have derived great advantage from stimulating pediluvia: it has been our practice immediately to precede doses of opium by this important adjuvant; its secondarily sedative influence, in connexion with the narcotic effect of the opium, is particularly beneficial.

We are a little surprised that our author has not mentioned ano-

dyne enemata among his list of remedies adapted to the second stage, as we have seen such excellent effects follow their use under the most discouraging circumstances. We have occasionally given large quantities of opium by the mouth, without producing any effect, and sleep has been speedily induced after a proportionate quantity, or even an equal quantity by the rectum. We have explained this circumstance by supposing that the susceptibilities of the mucous membrane of the stomach have become so much impaired by repeated stimulation, that it is rendered incapable of conveying those impressions to the sensorium, so essential to the production of a narcotic effect; whereas the rectum, not having been accustomed to the same morbid impressions, preserves its usual healthy relations.

Throughout the treatment for the second stage, Dr B. enforces the necessity of believing that when it is once fairly formed, it cannot be abruptly terminated, no more than typhus fever in the height of its career; we must therefore endeavour "to pilot the patient through the disorder with the least possible risk of structural injury to his constitution." He also advises us to pay particular attention to the moral management of the patient, endeavouring to gain an ascendancy over his mind without resorting to coercive measures.

When our endeavours are crowned with success, and the sleeping stage supervenes, we must still be cautious in our treatment.

The following extract includes the author's judicious observations on this important point.

"Should sleep come on it will be at first disturbed, and accompanied with nervous startings; it is therefore to be encouraged by all the means in our power; all noise should be avoided, and in warm climates a mosquito net ought to be let down so as to preclude any annoyance from insects: should the patient awake soon, he will often be in a state of alarm and nervous agitation; but if some warm stimulating drink, with a moderate dose of opium be given, and mild and assuring conduct adopted, he will in almost every instance fall into a more profound sleep, from which, through the restorative effects of "nature's soft nurse," he generally awakes perfectly rational, after which we have little more to do than support the strength and gradually diminish the quantity of stimuli which we have been in the habit of administering, so as to bring the constitution back to a moderate and healthy degree of excitement."

By "a moderate and healthy degree of excitement," we presume Dr B. means to indicate that condition in which all the organs will perform their appropriate functions, without *any artificial stimulus*.

With *suitable attentions* we believe the most inveterate drunkards

may be brought to this point; many instances have fallen under our notice of individuals who have long been accustomed to drink a *quart* of *spirits* daily; who, with proper care, have, in a few days, enjoyed better health by a total abandonment of their old habits.

Should our remedies not succeed in bringing about a favourable termination of the second stage, appearances will soon indicate effusion on the brain: when this becomes evident, Dr B. recommends that a large blister should be applied over the scalp, with blisters and mercurial frictions to the extremities, and the liberal administration of musk or ammonia; though he fears, that when the symptoms have arrived at this height, but little can be done by medical applications.

We would say a few words in relation to blistering the head in this disease; many practitioners are theoretically opposed to this remedy; our experience sanctions their employment, even in the height of the second stage.

After having given large quantities of opium in the manner heretofore described, if the symptoms go on increasing, if the pupils become contracted, as they almost invariably do, if the delirium increases, if the pulse quickens, &c. it has been our uniform practice to apply a blister over the whole scalp; we have often witnessed a favourable termination put to the symptoms (even in the most hopeless cases), by the adoption of this plan. Dr B. applies a blister after effusion has taken place; by the same means we endeavour to *prevent* its occurrence.

Our author has seen but few cases of delirium tremens which required the use of the lancet; in some particular instances it may be necessary. In cases complicated with local inflammation it may be advisable to bleed even freely; but even here, says our judicious author, "we must not lose sight of the general nature of the disease, and while, on the one hand, we reduce the strength of the arterial system by bloodletting, we ought to endeavour on the the other to raise, by appropriate means, the nervous power."

Dr Blake here brings his valuable remarks on this interesting disease to a close, hoping that he has established, to the satisfaction of his readers, the following general conclusions, viz.

"First. That delirium tremens is altogether a nervous disorder, the consequence of the sudden cessation of habitual intemperance in the use of diffusible stimuli; and to which the system is equally liable, whether it be suffering under a sporadic or traumatic affec-

tion, or be in apparent ordinary health at the moment of such a sudden change in the habits.

"Secondly. That the disease is one of a paroxysmal type, and may be divided into three stages, all essentially differing from each other in their symptoms and nature, and consequently requiring each a different modification of treatment.

"Thirdly, and lastly. That the stimulo-narcotic mode of practice, when so directed and modified as to be applicable to each particular stage of this disease, is the one which promises to be most successful."

We need not repeat our estimate of Dr Blake's treatise; but can only add, that we should be glad to see it more extensively circulated among the practitioners of this country.

Art. XII.—BELL ON BATHS AND MINERAL WATERS.

On Baths and Mineral Waters. In two parts. Part I. A full account of the hygienic and curative powers of cold, tepid, warm, hot, and vapour baths, and of sea bathing. Part II. A history of the chemical composition and medicinal properties of the chief Mineral Springs of the United States and Europe. By John Bell, M.D. *H. H. Porter, Philadelphia.* 12mo, *pp.* 532. 1831.

When we consider that almost all writers on medicine, hygiene and education, from the earliest periods, concur in recommending bathing as an important means for improving health, and a powerful remedial agent in various diseases, we cannot but be struck with the little attention which has of late years been paid to it, and the very slight extent to which the profession, as well as the public generally, have availed themselves of its advantages.

No agent is capable of producing such general, permanent, and beneficial effects upon the system as bathing, when properly managed; while from the agreeable sensations which it imparts, it has constituted equally the luxury of savage and of civilized life.

In ancient Greece and Rome it was held in such high repute and so universally practised by all classes of the people, as to become one of those indispensable comforts, without which life itself, in

their estimation, would be deprived of one of its chief enjoyments. Of the high rank assigned to it in the cure of diseases we have ample evidence in the writings of the Grecian and Roman physicians.

So long as the practice of bathing was kept within proper bounds, the effects ascribed to it by the ancients in imparting increased health and vigour to the system generally, can scarcely be viewed as exaggerated. But when, subsequently, it was resorted to merely as a luxurious indulgence, from the excess to which, in consequence, the use of the hot bath, especially, was carried, the good effects of the practice were in a great measure counteracted, and in many cases even injury to the constitution no doubt resulted.

At the present day it is among the people of the East and those of northern Europe, almost exclusively, that bathing is regularly and generally practised. In America, especially, and throughout Great Britain, the use of the bath is confined to comparatively a few individuals, and by these resorted to only during the summer months; while the great mass of the people are entirely precluded from enjoying its advantages, owing to the want of proper conveniences in their own dwellings and the absence of public establishments appropriated to their use; as well as from their ignorance of the extent to which frequent bathing contributes to their health and comfort. The time, however, is, we trust, fast approaching when it will be otherwise; when all, including the labourer and the mechanic, shall have the means, as well as the inclination, to enjoy throughout the year the regular use of appropriate baths.

It has been asserted that frequent bathing is of less importance at present than it was among the ancients; the general ablution of the body by the bath being rendered more necessary to them in consequence of their repeated indulgence in athletic exercises, the greater exposure of their bodies, and their ignorance of linen as an article of clothing. But this we deny. A large portion of the community amongst us are equally and unavoidably exposed to a variety of causes by which the surface of their bodies becomes loaded with filth, the speedy and complete removal of which is indispensable to the maintenance of perfect health. To pretend to the preservation of strict personal cleanliness, without the aid of the bath, is a perfect absurdity in any individual. Even the natural discharges from the skin, if allowed to accumulate upon the surface, are always productive of uncomfortable feelings, frequently of disease.

Under no circumstances, therefore, can the use of the bath, with propriety, be dispensed with.

With the very general adoption of a more simple and improved system of therapeutics, we are happy to find that the attention of physicians is beginning to be again directed to the importance of bathing as a remedial agent. When the few remaining prejudices against its use, the result of erroneous impressions as to its mode of operation on the system, shall be removed, we are fully persuaded it will be as frequently resorted to as it was by the earlier practitioners; divested, however, of the useless and cumbrous refinements in its mode of administration, which we find described in the writings of Galen and Baccius.

It must be evident that the proper management of bathing, so as to obtain from it effects decidedly advantageous, either as a purely hygienic agent, or in its application to the cure of disease, can result only from a correct knowledge of the manner in which it affects the skin, and through it, the different organs of the body, and of the particular circumstances and morbid conditions which call for an increase or diminution of its temperature. Upon all these points, the majority of the medical profession, we regret to say, are not well informed, while the public at large, as we may suppose, are in entire ignorance. To this, more, perhaps, than to any other cause, is to be attributed the general neglect of bathing which prevails both here and in England, or, when for a season public attention has been directed to it, the disuse into which the practice has speedily fallen.

The unreflecting are very apt to imagine that the simple application of water to the surface of the body cannot be productive of injury, and, hence, that in the absence of disease, they may plunge into it at any time with perfect impunity. From this error not a little mischief has resulted. The injurious effects of immersion in cold water when the body is in a state of exhaustion from fatigue, are evinced in the well known case of Alexander the Great, whose life was nearly destroyed by plunging after a fatiguing march into the Cydnus. The almost instantaneous death, also, of a highly respectable citizen was produced, during the last summer, in New York, by immersion in a cold bath when exhausted by profuse perspiration.

That the cold bath acts as a tonic, by imparting strength and vigour to the system, is a very common opinion with the public, and one advocated in almost every treatise, professional or other-

wise, which has appeared on the subject of bathing to a very late period, while to the warm and hot baths is ascribed a directly contrary effect; they being presumed to occasion invariably relaxation and debility. The weak and valetudinary being induced by these erroneous views to make use of the cold bath, and not deriving from it those advantages they were led to anticipate, but, on the contrary, uncomfortable feelings or even more serious injury, have erroneously attributed to bathing in general, effects which are referable only to the use of water of too low a temperature, at a time when the system is deficient in strength and vigour.

The terms tepid, cold, and even warm, when applied to baths, within the limits of temperature at which they are generally resorted to, are to a certain extent merely relative: a bath of the same temperature producing the sensation of coolness or of warmth, according to the condition of the system, its degree of health and vigour, and the consequent state of the skin at the period of immersion; while the subsequent effects of the bath will vary likewise under these different conditions of the body. It is from this circumstance that have resulted, in a great measure, the erroneous and contradictory opinions which prevail on the subject of bathing. The increased glow of the skin, accelerated pulse, and augmented appetite, induced by the reaction of the system in a vigorous and healthy individual, after a short continuance in a cold bath, have originated the idea of its tonic powers; while the increased perspiration, diminished action of the heart, and general languor, incident to a prolonged continuance in, or abuse of, the hot bath, have caused every bath which does not occasion a decided chill at the moment the body is immersed in it, to be ranked as debilitating. These opinions are the very reverse of those of Galen, who pronounces immersion in cold water to be fit only for the offspring of bears and lions, recommending the warm bath, however, as capable of promoting the growth and strength of the young.

The important fact to which we have just alluded, that the sensation produced by water of any given temperature, below, at least, that of the human body, will vary in different individuals according to the amount of vigour they possess, and of the ordinary or accidental temperature of their skin, has been too much overlooked. In consequence, the terms cold, tepid, and warm, as indicating the temperature of baths, are employed in so vague a sense, as well in the writings of medical men as in popular discourse, that the direc-

tions for bathing laid down in the former became useless, and personal experience an unsafe guide. The same bath being pronounced cold or tepid, warm or hot, by different persons, or even by the same person at different periods.

We are acquainted, indeed, with no work, heretofore presented to the public, from which can be obtained a full and satisfactory account of the different kinds of baths, and the rules for their judicious management. The work of Dr Bell, therefore, the title of which is placed at the head of this article, we consider a well timed and acceptable offering to the profession, and to the public generally. Availing himself of the labours of others, as well as of his own ample experience, the author has attempted to lay before his readers a correct statement of the particular effects produced upon the system by immersion in cold, warm and hot water, or vapour, and the particular circumstances under which one or other of these varieties of bathing is to be recommended or prohibited. In this attempt, we feel pleasure in saying, that in our opinion he has been completely successful. While the physician will derive from its pages much useful information; the plain and unpretending style in which the work is written, will enable the unprofessional reader to consult it with advantage, in reference to the employment of bathing, for the maintenance of personal purity and the promotion of health generally. Its publication will, we trust, cause the bath to be more generally resorted to in the treatment of disease, and render its use more popular among every class of our citizens as an important hygienic agent.

The first chapter is devoted to a short, but extremely interesting sketch of the history of bathing—the arrangements for its employment among the Greeks and Romans, and the manner in which it is practised, at the present day, by the Russians, Finlanders, Turks, Persians, Egyptians, Hindoos, and American Indians.

The second chapter treats of the structure and functions of the skin, its connexion and sympathies with other organs, and the manner in which it is affected, and through it, the system generally, by heat and cold, but especially by the application of water at different temperatures. From the author's summary of the subjects discussed in this chapter, we present the following extracts, not that they contain any thing of which the well informed physician may be supposed inogrant, but because the facts set forth in them constitute the foundation of all that is subsequently advanced on the

effects and management of bathing. It is important, therefore, that they be kept constantly in mind.

"7. The influence of the skin over the animal economy must be manifestly great, and of course the operation of the agents, by which it is impressed, ought to be familiar to us. These act in two ways. 1. By exciting or diminishing its nutritive functions of absorption, and secretion and excretion; and, 2. By increasing or diminishing its sensibility and sensations.

"Bathing affects it in all these ways: by softening the cuticle or outer hard lamina of the skin, a more ready entrance is afforded to water and other fluids, and by subsequent friction, this part more readily peals off, so as to leave the skin more delicate for the discharge of its various functions: in addition to this, baths by their temperature acting on the sentient extremities of the nerves, and the minute blood-vessels blended with them, will either accelerate or retard the functions, according as the medium in which the body is immersed be hot or cold.

"8. Simultaneously with these changes in the functions of the skin, or immediately consequent upon them, will be changes in the nervous system in general, and in the circulation, respiration, digestion, and various secretions, by the links and means already designated.

"9. The effects of bathing are relative to the temperature of the fluid and that of the living body to which it is applied.

"10. The medium temperature of the human body is from 96° to 98° Fahrenheit. The warmth is less at the extremities than in the central parts of the body, so that in this respect there is often a difference of 6° or 8° between the hands and the arm pit, even when the former do not feel at all cold to their possessor."

"12. The air in which we live being almost always of a lower temperature than that of the body, there is a constant evolution, and discharge of caloric from the latter into the former. This loss would become excessive in low temperatures, but for the covering of the skin, which is a bad conductor, and the protection afforded by clothing of woollen, or furs, which are also imperfect conductors of heat.

"13. In the winter season, and in cold climates, the digestion is more vigorous, respiration fuller and complete, and nutrition more active; there is, in fine, an activity of all the organs of internal life, by which caloric is secreted. The absence, in a great measure, of sensible perspiration, or sweat, prevents the loss of heat by evaporation, and the skin from being such a good conductor as in the opposite state of things.

"14. The excitement produced by living in air of an elevated temperature, is moderated by the increased cutaneous secretion, or sweat, and consequent evaporation.

"15. Our sensation of heat will mainly depend on the proportion between the formation of caloric in the organs of the animal economy, and its expenditure by the surrounding air and inert substances with which we are in contact.

"16. Habit reconciles us to a wide range of atmospherical temperature. Cold air, unless so extreme as to benumb the nervous expansions of the skin, and enfeeble the nervous energy and functions generally, and hot air, equal to, and sometimes exceeding the medium temperature of the body, unless perspiration be suppressed, are both well borne. In both the average heat of the body remains the same.

"17. The exhausting effects of cold, always readily felt at the extremities of the body, must be obviated, by attention to all the means, already indicated, for giving energy to the system, or in other words, increasing the action of the minute vessels and nerves of the organs, by which caloric is evolved.

"18. The more vigorous the circulation and nervous energy, the better can cold be borne. External heat, then, by exciting the functions, and contributing to the evolution of animal heat, enables us the better to resist cold. This must be understood of the equable operation of external heat, and its not being continued so long as to exhaust the minute vessels of the skin by copious perspiration, and of other parts by abundant discharges.

"19. The medium temperature of the body is less in infancy and old age, and the ability to resist at these times the exhausting effects of cold is also less.

"20. Inordinate heat of the body is felt when the cooling processes, by perspiration and evaporation, are checked. It then becomes necessary to moderate the excessive action of the organs of the body, from all of which the caloric is evolved. This is best done by cold applied to the skin, or by means of cold drinks to the stomach, and cold injections into the intestinal canal.

"21. Our sensations of heat and cold vary, according to the conducting power of the substances applied to our bodies, and the suddenness of the change in the temperature of the medium in which we are placed.

"22. Unaccustomed as we are to immersion in a watery medium, added to its ready conducting power, prevents us from experiencing any very decided sensation of warmth in a bath of less temperature than that of the human body, or at least, of its extremities."

This chapter closes with some judicious observations on the clothing worn next the skin. The author conceives that in cold and variable climates and seasons, they alone can, with propriety, dispense with wearing flannel, "whose circulation and vital functions, generally, are vigorous, and whose skin is habitually warm, that is developes animal heat largely." In persons, however, in whom

"the circulation is languid, the skin, and especially that of the extremities, frequently cold, and digestion slow, flannel is of the first necessity during nearly eight months of the year in our climate." They, also, whose employments are such as to expose them to sudden transitions from heat to cold, or who are subjected to excessive labour or exercise in the open air, so as to induce sweating and fatigue, will find in an inner garment of flannel an important preventive from disease. "In a disordered state of the body, as in catarrh, asthma, rheumatism, and bowel disease, it is necessary that flannel should be worn next to the skin; at least the omission would be attended with risk." To derive, however, from the use of flannel the good effects it is capable of producing, its use must be accompanied with the following conditions:

"1. That it be regularly and at short intervals changed, its use during the night, with the exceptions already indicated, being dispensed with. 2. That it be not tight to the body, nor of a texture firm and thick by much washing. 3. That friction of the skin with a coarse towel or flesh brush be practised night and morning; and sponging this surface with cold or tepid water according to the season and the temperature of the skin, be had recourse to, before friction, every morning, or at least on alternate days. In cases where the skin is not of uniform warmth and is readily chilled, it will be sufficient to use the sponge well squeezed, and just moist, or perhaps damp, renewing, of course, its immersion in water, and subsequent squeezing several times during the operation of sponging the skin with it. This last condition can be carried into effect by most persons, but there are some who invariably suffer during the colder months, from even sponging their surface with water of the temperature of the air, or under the degree of decided warmth. To such, a warm bath twice a week will be advantageous."

In the ensuing chapter, (Chapter III.) we are presented with the author's division of baths, which is into *cold*, *warm*, and *hot*. This he conceives to be the most simple and natural division, being the one recognized by our sensations, and the most applicable to the purposes of hygiene and of medicine.

"The intermediate degrees between positive cold and warmth, are vaguely expressed by the terms cool and tepid, but for all practical and available purposes," Dr Bell remarks, "it will be sufficient to include the first of these, or cool, under the distinct head of cold, while the second, or tepid, will be classed with that of warm."

We have already noticed the loose and indefinite manner in which

the terms cold, tepid or warm and hot, are employed by writers on the subject of bathing. From this want of precision, the utmost difficulty has arisen in deciding upon the applicability to particular cases of the directions which are given for the management of the bath, and no little discrepancy of opinion between different authors as to the general or relative effects of the different kinds of baths.

The term tepid is applied by Currie in one part of his work on the effects of water, &c. to water, the temperature of which is from 87° to 97° of Fahrenheit, while in another, the temperature of the tepid bath is said to be from 92° to 96°. By the term *cool*, says the same writer, I indicate the temperature from 87° to 75°. "Now," observes Dr Bell, "87° represent tepid, as nearly as may be,—a tepid bath, which we have seen, this author considers to range ten degrees higher. Saunders speaks of Buxton as celebrated for its warm spring; and again tells us, 'that its temperature in the gentleman's bath, is invariably 82°, which, therefore, entitles us to consider Buxton water as a *thermal* spring, though but low in the scale of these natural waters.' Now, both of these terms, which I have italicised, are wrongly applied, and must increase the difficulty of classification. Saunders's warm and thermal come within the range of Currie's cool bath, and the limits assigned by the latter to cool, will include, by several degrees, what is called warm by the former." According to Willich, a cold bath is one of a temperature, varying from the 33d to the 56th degree of Fahrenheit; a cool bath, one of a temperature between 56 and 76 degrees; a warm bath one the temperature of which is above 76 and below 98 degrees; and a hot bath, one which has a temperature above 98 degrees. Dr Parr, who has written a very interesting thesis on the subject of bathing, places the proper temperature of a cold bath between 62 and 72 degrees; of a tepid bath between 72 and 96, and of a warm bath between 96 and 106 degrees. It is true that many individuals of robust constitution, and in whom, from the freedom and activity with which their respiratory, digestive, and circulatory functions are carried on, there is a permanent excess of heat on the skin, will experience from immersion in the warm bath of Willich, and the corresponding tepid bath of Parr, no sensation of chillness; but upon the majority of those, at least, who have been subjected for a few years to the enervating influence of civic life, both these baths will produce the effects of an ordinary cold bath.

Dr Bell applies the term warm to a bath the temperature of which ranges from 92° to 98° of Fahrenheit.

"A bath of 92° to 94°, as of a temperature equal that of the extremities and most of the external surface, will," he remarks, "at first feel warm, and to some will continue to convey the sensation. But we believe that after a short immersion in it, there will be a slight feeling of uneasiness, or at least want of the complete and diffused sensation of warmth."

This has reference, however, only to the common healthy condition of the animal economy, where the evolution or supply of heat in the system and discharge or loss from the skin take place with regularity.

"In other conditions, as where the skin of an individual feels to himself habitually hot, where it has been thrown into a state of excitation by active exercise, short of sweating and fatigue, or by stimulating drinks and medicines, then the evolution of caloric being excessive, a bath of even a lower temperature than that mentioned above will be called warm, because it will not exhaust or convey off the caloric so fast as it is formed. These persons, immersed in water of 90°, or even 88°, may call it warm, at least they will declare that it conveys no sensation of chillness or coolness. But, if we have regard to the declaration of a large majority of those who have recourse to the warm bath for hygienic purposes, and who retain their healthy sensations, we are safe in taking 95° of Fahrenheit as indicating the temperature of this kind of bath; and if we take the space of six degrees, three above, and three below this standard, we shall have a sufficient latitude, viz. from 92° to 98° for the warm bath, and every reasonable adaptation, within these limits, to individual peculiarities, whether of animal temperature or sensibility. If an extension of the scale be thought necessary, experience and authority agree in making it downwards, that is to say, as low in the thermometer as 90°, but in very few cases, indeed, could an extension upwards, or above 98°, be admitted, consistently with the general indications, for using the warm bath, or the effects which follow its use.

"Immersion in water, of a temperature ranging a few degrees below 92° or 90°, if we admit this latter to be as the lowest limit of the warm bath, gives rise to no very decided sensation. It constitutes a tepid bath, which some call pleasantly warm, others cool, or which agreeable on first immersion, will, after a few minutes stay in it, cause feelings of occasional creeping and discomfort. Its use is not to be denied, in particular cases, as a remedial agent, but we can seldom speak with any certainty of its hygienic operation, or effects on healthy persons, other than as far as it is instrumental to the general purposes of ablution, without imparting the shock to the human body which it receives from the cold bath."

Dr Bell conceives that we may estimate as the probable representative of the tepid bath, water of a temperature between 84° and 90°, or 92° Fahrenheit, but we cannot, as in the case of the warm bath, take a specified degree, respecting which there shall be a general, if not universal, accordance of opinion; that is, of opinion directly deduced from sensation.

"Equal difficulty is met with in an attempt to separate, in a marked manner, a cool from a cold bath. In both there is more or less of a shock felt, at the moment of immersion: and if we are to recognize a difference, it will mainly consist in the circumstance of the bather being soon accustomed to the cool bath, owing to his moderate loss of caloric, and his even ceasing, after a minute or two, from complaining of any unpleasant feeling of chillness; whereas, in a true cold bath, the body is in a continual struggle to resist the strong exhausting agency of the medium in which it is immersed; and the feeling of cold, though in a vigorous person it may cease to be painful, is, nevertheless continued, and in a measure uniform in its direct effects and phenomena."

According to the definition of our author a cold bath is one of 70° and under.

"In a bath of 70° and under," he observes, "there will be a pretty general sameness of sensation experienced by those using it. The shock will be evident, and there can be no hesitation in our designating it as cold. The spring water of every country furnishes a bath of this kind to the inhabitants, although there be a range of thirty degrees between the two extremes, as we find it in the northern climate of Europe, and in the West Indies."

Dr Bell restricts the term hot bath to one the temperature of which is above 98°. Immersion in water at this temperature produces upon the large majority of the human species, the stimulating effects of heat, indicated by acceleration of pulse, augmented and preternatural heat of the skin, felt especially in the cheeks and temples, with some fulness of the head and slight confusion of thought.

"If any distinction," says our author, "between different varieties of baths be of practical importance, and conducive to comfort and health, and to the cure of disease, it is that which ought to be made, and to be generally understood, between the warm and the hot bath. Much of the disrepute into which warm bathing has fallen, and most of the erroneous conceptions respecting its hygienic and medicinal powers, have originated in an oversight of this distinction, and in confounding two agencies and modes of impression, the effects of which differ from each other in a most marked manner.

"Vapour baths are to be regarded as affecting the animal economy, in virtue, mainly, of their heat, when they are of the dry kind,

and of their heat and moisture when they are the product of hot or boiling water. They are also susceptible of another division, viz. into *simple* and *medicated*. The first, when they consist of merely hot, dry air, or watery vapour; the second, when holding in solution or suspension various medicinal substances. The effects of vapour, whether of the dry or moist kind, applied to the human frame, are also greatly modified by the circumstances of its application, that is, whether the whole body be immersed in it, so that it shall be inhaled, and applied to the lining membranes of the lungs, or only to the skin, the head being free, and a direct communication established with the common atmospherical air.

"Earth or mud baths act in nearly the same way as moist vapour baths."

The fourth chapter treats of the cold bath, its effects, the circumstances under which a resort to it is proper or otherwise, the diseases in which the cold bath or the application in various ways of cold water to the skin is serviceable, and of the use of cold affusions and dressings to wounds, ulcers and other external injuries.

The cold bath was no doubt the one first resorted to as a means of refreshment and recreation, especially in warm and temperate climates, and during the summer months in the more northern. It is the one, also, which is the most generally adopted by savage nations, whose bathing place is generally the nearest river, or, when convenient, the sea. The temperature of the cold bath, when ordinary river or spring water is made use of, will, of course, vary with the climate and season; seldom sinking below 40° or rising above 70°. Now, although immersion in water of this temperature will be readily borne by an individual in the full vigour of health, and who is not, at the time, labouring under exhaustion from fatigue, profuse perspiration, or exposure to intense solar heat, it is by no means adapted for general use. Its employment requires a very considerable degree of circumspection. To a large class of persons it will prove decidedly injurious. It is capable of being applied, with various modifications, much more extensively as a remedial agent than as a means of preserving health.

The effects of cold water on the body when immersed in it have, it is true, been very generally considered as those of a tonic, communicating firmness and vigour to every part of the frame. It is not surprizing, therefore, that from an early period it should have been resorted to as a means of strengthening the constitution of the feeble and valetudinary, and be made to constitute an important item in the physical education of youth. Indeed, until a very late

period, even by many at the present day, we find the same opinion and appropriation of the cold bath maintained and recommended. The opinion, however, is entirely unfounded, and the practices which have grown out of it have been productive of very serious mischief. Dr Bell has very satisfactorily shown, in the work before us, that the cold bath, so far from increasing the strength and energies of the system, on the contrary, diminishes them; that it is not a tonic, but a very powerful sedative, and that its depressing effects are in a direct ratio with the feebleness or exhaustion of the individuals subjected to its influence. This is proved by the effects of cold upon hybernating animals, and upon very young animals not of this class. In both, respiration and calorification are comparatively feeble, they are therefore illy able to resist cold, the direct tendency of which is to depress still more these two functions, "so that less air is inhaled and consumed, and less heat evolved; and, at the same time, to produce a general torpor of the other functions, and especially of the nervous system."

That by the cold bath the actions of life are diminished, not increased, the author further proves by a review of the phenomena to which it gives rise. On immersion there is first experienced a general chill or shivering, indicated in familiar language by the word shock.

"The skin is pale and shrunken, and not, as erroneously supposed, in a state of increased contraction or spasm. The prominence of the papillæ, and roughness of the skin at this time, are not the result of an active process, but of the emptying and collapse of the numerous cutaneous vessels which leave the papillæ projecting, as it were, and cause, at the same time, a greater hardness of the skin.

"That there is really a shrinking of the vessels of the skin, diminished fulness, not only of them, but of the vessels in the cellular tissue beneath, we have good evidence in the familiar fact of a ring, which before the wearer's entering the bath just fitted the finger, or was perhaps rather tight, being found inconveniently large after coming out from it. Nor is the diminished paleness, fulness or plumpness of the outer surface evinced in those parts alone which touch the water. A cold bath, coming up only to the middle of the body, even a cold pediluvium or foot bath, will remove the colour from the cheeks and give them, in persons of ready sensibility, a comparatively shrunken appearance."

This shrinking or collapse of the capillaries occurs also, Dr B. maintains, internally on the pulmonary and digestive mucous mem-

branes, with which the skin directly sympathizes. This is proved by the diminished heat and moisture of the air exhaled—by the absence of thirst—the diminished redness of the tongue, and by the want of the dry and parched state of the latter, and of the fauces generally, attendant upon a highly excited state of the gastro-intestinal circulation. The bluish hue of the lips and other surfaces is attributable to the interruption in the capillary circulation both of the lungs and skin.

As it regards the brain, the author denies the generally received opinion, that the collapse and diminished activity of the external vessels are replaced by an accumulation of blood in that organ.

"The functions of the brain are vigorous in proportion to the amount of blood distributed to this organ; and it is only when the supply is excessive that the mental faculties, for a while preternaturally active, become perturbed and weakened, as in the state preceding delirium and apoplexy, and pending these maladies. But no symptoms analogous to these are discovered on immersion in the cold bath, and when the presumed determination of blood to the brain is supposed to exist. From the first application of the cold fluid, there follows impaired mental vivacity; the person feels dull, has his range of ideas limited, and perceptions blunted; he is torpid, but it is the torpor of gradually abated cerebral circulation, unaccompanied by those sensations of fulness, and singing in the ears, which would be caused by undue determination of blood to the part."

As a necessary consequence of the diminished activity of the brain and nervous system generally, produced by the cold bath, there is, also, a diminution of muscular power. The muscles are thrown into a state of inaction: "their fibres approximate passively, owing to the distending fluids being withdrawn, and they are less bulky than usual."

That the cold bath exerts a sedative influence upon the action of the heart, is evinced by the diminished frequency of the pulse. Currie found, in one instance, the pulsations at the wrist to decrease uniformly from ten to fifteen beats in a minute, becoming, at the same time, firm, regular and small. "Athill, though he expressly states that the pulse is greatly hurried during cold immersion, admits its subsequent retardation, and tells us that it is diminished in frequency from seventy-six to sixty beats in a minute, in water of 52° of Fahrenheit." Marcard declares that the cold bath uniformly renders the pulse slower, and that the longer the continuance in it is prolonged, the greater is its sedative power: in his own case he

found, after remaining in the water an hour and a half, the pulse fell from sixty-three to fifty-four beats in a minute. In regard to the influence of the cold bath upon the pulse there is a slight discrepancy in the statements of writers. Thus in the experiments instituted by Stock, he found, in general, the pulse to be quicker and weaker immediately after immersion; in a few instances, only, was it slower. Dr Parr remarks that this was also his experience, but that at a later period the pulse became usually more slow and full. In an individual labouring under a slight attack of fever, he found the quickness of the pulse to become greatly diminished in the cold bath. Other authors have found it invariably to become slower; their observations were drawn, however, from the partial application of cold water.

"But," remarks Dr B. "whatever doubts might have existed respecting the direct sedative and depressing effects of the cold bath, must be dispelled by a knowledge of its effects on the calorification or the formation of animal heat. When we discover that the evolution of caloric is less, and the ability to furnish it is diminished, we are satisfied at once of the feeble functions of the three systems, pulmonary, capillary, and nervous, since it is on the combined energy of these that the formation of animal heat in the economy mainly depends. Not only are we apprized of this diminished temperature by our sensations, but we also learn the fact by the application of the thermometer to a part of the body, under the tongue, to which the water has not access. Even for some time after leaving the bath, and when we feel a glow of pleasurable warmth, the temperature is still less than before immersion*; showing how profound was the sedative impression on the nervous system produced by the cold of the water."

These effects occur whether the individual be immersed at once in cold water, or is gradually subjected to the operation of cold by being placed in a warm bath of 98°, the temperature of which is lowered gradually by the introduction of cold water. For this statement is adduced the authority of Giannini.

Agreeing entirely with our author that the effects of the cold bath upon the system are decidedly sedative, we, nevertheless, cannot go with him the full length in denying that simultaneously with the diminished circulation in the capillaries of the external and internal surfaces, it produces a determination of blood to the larger vessels, especially the venous trunks of the abdomen, thorax and brain, or rather that upon the application of cold to the skin, a passive

* Currie.

engorgement of these vessels occurs. This we know to be the case during the cold stage of an intermittent, the phenomena of which closely resemble those from the effects of cold.

On leaving the bath, while the bather is still exposed to the air, the sensation of cold is increased, and, usually, is attended with shivering. There is, also, a still further reduction of animal heat. These effects are most strikingly evinced when bathing has been practised out of doors; in which case, a current of air passing over the naked skin increases the coldness of the body by causing evaporation. When, however, the surface has been fully dried, and the customary garments resumed, the bather begins to experience a glow over the skin and a feeling of general warmth; a restored equable circulation takes place, with vivacity of the senses, and readiness to engage in muscular movements. It is these secondary effects of the cold bath, which have given rise to the erroneous supposition of its stimulating and tonic effects: Dr Bell, however, has shown that so far from there being any actual increase of heat, the thermometer applied to the skin, indicates, that it has not, at this time, even its customary temperature. "The glow experienced is merely relative to the cold medium in which the body has been immersed a few minutes before." There is, also, still a diminished excitement of the organs of sensation and motion.

"And hence," he remarks, "on coming out of the bath, the accumulated nervous energy enables the individual to perform, for a time, the various functions with considerable promptitude and energy. The animal economy in such a case has not been stimulated; it has not by any means received a direct accession of strength; it has merely been allowed, in a measure, to rest and enjoy comparative exemption from the operation of agencies which, in their very nature, are more or less exhausting. It has in fact been placed in a state somewhat analogous to sleep, with this difference, that the cold has exerted its sedative influence more particularly on organic life or the nutritive viscera, while the quietude of sleep is more especially evinced in the organs of animal life or of relation."

In individuals of feeble constitutions, or in whom the energies of life are reduced, from any cause whatever, the secondary effects of the cold bath just alluded to do not take place. In them, on the contrary, the sense of coldness, shivering, languor, dulness of the senses, disinclination to thought and motion, with pain in the head and joints, and feeble pulse, still continue, and may persist for hours

or even days, which is another evidence that the cold bath does not act by invigorating but by decreasing the powers of life.

From what has now been said of its effects, and the subject is enforced and illustrated to a much greater extent by our author, it is very evident that they alone can use the cold bath with comfort and advantage, who are of a sanguine and robust constitution, in whom the animal heat is habitually great, or rather in excess, and who have been subjected to no cause, by which the activity of their vital functions has experienced a temporary depression. To all who are differently circumstanced, the cold bath cannot fail to prove a source of present discomfort, if not of permanent injury.

"If had recourse to in infancy and early life, it furnishes a very good test of the innate vigour of the individual; the robust child will probably bear well the application; he will often thrive *while* using it—though it may not be on account of using it. But the thin, delicate, and feeble infant, whose temperature is already too low, and whose functions react imperfectly under any depressing agency, will be permanently and prejudicially affected by cold immersion."

Dr Bell proceeds next to the consideration of the therapeutical application of cold water to the surface of the body by *immersion*, *affusion*, *ablution* or sponging, and *douching* or the spout bath. The effects of cold water upon the system being shown to be those of a sedative, the cases of disease in which, alone, it can be resorted to with advantage, are of course those marked by excessive excitement, either of the general circulatory system or of the capillaries of a part, especially when accompanied with considerable increase of the heat of the surface.

In the extensive class of morbid affections generally included under the head of fevers, the application of cold water to the surface is productive of the very best effects. Though occasionally adopted from a very early period, at different times, and in various countries, it was not until the appearance of the work of Dr Currie of Liverpool in 1797, that the practice of bathing in fevers, was fairly introduced into curative medicine in a systematized shape: and although since that period, experience has fully proved its efficacy, yet from various prejudices existing in the public mind, and a remissness on the part of many practitioners to avail themselves of the remedy, it is still employed to a far less extent than its importance demands. In those forms of fever, "in which the evolution of heat is excess-

ive, the skin acrid and hot to the touch, either partially or entirely, the brain affected with delirium or stupor, thirst urgent, tongue either dry and furred, or red and shining, or darkly incrusted; cold immersion or affusion, and, still more frequently, cold ablution or sponging, have been found signally efficacious." The abatement of all the morbid symptoms and the return of comfortable feelings to the patient from the application of cold water to the skin, in these cases, are sometimes experienced with surprising promptness—in every instance, the duration of the disease is materially shortened, and the certainty of its favourable termination is increased. The directions given by Dr Bell for the use of the remedy in the various forms of fever are extremely judicious—for them, we must, however, refer our readers to the work itself.

In the different hemorrhages, the application of cold water to the surface, is, likewise, a remedy of no mean efficacy. In epistaxis, popular experience had early shown its good effects, while in discharges of blood from the uterus, its employment is directed by nearly every physician, and by many is relied on to the exclusion of all other means. In hemoptysis, however, although it has received the sanction of several distinguished members of the profession, by others of equal authority it is deemed a doubtful or hazardous remedy. This opinion Dr Bell conceives to be unfounded; he strongly advocates its employment, as well from the result of his own experience as from that of others. He maintains that the remedy acts in arresting the hemorrhage from the lungs, by producing "simultaneously with the torpor of the capillaries of the skin, that of the minute vessels of the pulmonary mucous tissue." In vomiting of blood, hemorrhage from the bowels and bladder, and in hemorrhoides, the application of cold water is equally beneficial. In local inflammations, externally situated, the beneficial effect resulting from the application of cold to the seat of the disease is admitted by nearly every physician; in inflammations, however, of internal organs, if we except the brain, there is considerable diversity of opinion as to the propriety of the remedy. Thus while many of the French, and a few English practitioners admit, that cold applications to the epigastrium, surface of the abdomen, pubes, &c. are proper in inflammations of the stomach, bowels, uterus, and bladder, others consider them to be productive of injury; and we believe there are but few, if any, who would advocate their use to the chest in inflammations of this cavity. In all active inflamma-

tions of the internal organs, except in those of the thorax, we have reason to believe that the application of cold will be found beneficial. Upon this point, Dr Bell has given no decided opinion.

We cannot follow our author in his remarks upon the external use of cold water in cases of burns, sun-stroke, poisoning from opium and other narcotics and from hydrocyanic acid, and in asphyxia from deleterious gases, in various convulsive diseases, in constipation and ischuria, and in wounds, ulcers, and other surgical cases. We recommend this part of the work, however, to the attentive perusal of the younger members, especially, of the profession.

Sea bathing is the subject of the fifth chapter. The temperature of the sea water along the Atlantic coast, differs but little from that of the cold bath, at least, during that season of the year when the sea shore is generally resorted to by invalids and others; being from 60° to 80° of Fahrenheit. Sometimes it is even higher, so as to some of a sanguine temperament to feel actually warm. The temperature varies a few degrees, according as the tide is at its ebb or flow, and, also, with the hour of the day. The general remarks made in reference to the cold bath, will apply, consequently, equally to bathing in the sea. The shock, on immersion, is, of course, less than in the former, the temperature of which ranges from 40° to 60°; but it is still generally felt, and is followed by the other effects experienced from immersion in cold water. "The difference is in degree, not in kind, and merely amounts to the greater ability in persons whose excitement is but moderate, to tolerate the sedative effects of sea bathing, and to react after coming out of the water."

The effects of sea bathing are modified, however, by the circumstances under which it is made use of, and the effects on the skin of the salts with which the water is impregnated. Immersion in the sea is usually preceded by some degree of exercise, in walking or riding to the beach, and is accompanied by some muscular exertion, in struggling against the waves, or, in the more robust, by attempts to swim. The dread of danger, likewise, which many experience, on entering the sea, powerfully affects the nervous system, causing hurried breathing and accelerated circulation. To which is to be added, the effects from exposure to often a cool and keen wind from the sea, which on our coast must of course be easterly. From the slower evaporation of a saline, than a simple aqueous fluid, the skin, after bathing in the sea, becomes incrusted with saline particles, which, in consequence of the friction produced by the clothing, causes a gentle stimulation

of the surface. "That such incrustation is really formed on the skin," remarks Dr B. "in consequence of bathing in the sea, one may easily satisfy himself, by applying the tongue to any part of the body, even after several days have elapsed from the last time of bathing." It is from this cause, probably, that is to be explained the generally admitted fact, that persons of even comparatively delicate habits, are less susceptible to take cold after being wet with salt than with fresh water.

The stimulus of sea bathing, as our author remarks, is not referable to the salt water, but to the saline particles deposited and left on the skin after it is dry; it is, of course, secondary, and cannot modify the direct or immediate effects of immersion; these are such as must necessarily be experienced from other varieties of cold bathing. "The chief exception is in those cases in which the skin itself is the seat of irritation and disease, and in which the stimulus of the saline particles deposited during the bath proves prejudicial."

Sea bathing cannot, with propriety, be resorted to by the delicate and valetudinary before the middle of June, nor after the first week or middle of September. The cold rains and easterly wind, which occur previously and subsequently to this period of the year, are more or less prejudicial to the individuals alluded to. Such are, indeed, severely tried, in the midst of July and August, by easterly gales, which are peculiarly searching and distressing.

The author presents some judicious remarks on the manner of sea bathing, and complains, with just cause, of the want of proper facilities and aids for bathing along our sea coast, in consequence of which, the benefits to be derived from immersion in the sea are in a great measure counteracted. Some judicious hints are likewise presented for remedying the inconveniences complained of.

The observations of Dr Bell on swimming, contained in this chapter, are in the highest degree appropriate. It is recommended as a healthful exercise, counteracting in a great measure the depressing effects of the cold bath, and hence enabling a much larger class of persons to avail themselves of its use; and as an accomplishment calculated to secure the individual himself against danger when on the water, and to enable him to afford efficient assistance to a helpless fellow creature when accidentally submerged.

In relation to the proper time for using the bath, this, whether it be of common or sea water, warm or cold, is invariably before a meal, and never on a full stomach, or during the first stage of di-

gestion. The morning is the period generally directed as most appropriate for sea bathing. It may be so considered, provided the individual rise from his bed, and reach the beach with a warm or hot and dry skin; at no time of the day is immersion in the sea, or in a cold bath, admissible, should the skin be cool, chilled or perspiring.

"Persons," remarks the author, using the language of Buchan, "in feeble health should content themselves with a walk in the open air before breakfast, nor should that be continued beyond the first sensation of fatigue. The time of bathing ought to be postponed until past noon, or at least some hours after breakfast, when the digestion of that meal may be supposed to be terminated; and such a degree of exercise should always be taken previously to entering the water, as may be sufficient to produce a general sensation of warmth over the whole body."

The time of increased heat and flushing, it is subsequently observed, is precisely that in which the bather ought to visit the beach, with this important proviso, however, that this time do not correspond with the first period of digestion, or that immediately succeeding a meal. Persons in full health, who resort to the shore for variety and pleasure, need not be very particular as to the hour when they bathe, or the period during which they remain in the water, provided that they do not enter it immediately after a meal, nor during the state of lassitude produced by excessive bodily exertion, late hours, or by undue indulgence in much eating, or by drinking strong drinks. For the precautions in regard to the length of time the invalid should remain in the water, we must refer to the work itself.

As it respects the therapeutic application of sea bathing, the same remarks, with some few exceptions which we shall notice, will apply as in the case of the simple cold bath.

Scrofula is the disease in which the remedial effects of sea bathing have been the most generally and highly praised; and in individuals of a scrofulous habit, Dr Bell conceives that sea bathing is a less equivocal remedy than the simple cold bath. "It abates the undue heat and dryness of the skin, and the excitement of the vessels, especially of those minute capillaries, the morbid action of which so conspicuously keeps up the diseases of the glands, and other parts of the animal economy." Ulcerations of the hairy scalp are benefited by first shaving off the hair, and then frequently sponging the

diseased surface with tepid sea water. In scrofulous affections of the joints, accompanied with ulcerations outwardly, salt or sea water has always been a favourite local application. In dyspepsia, hypochondriasis, and their numerous associated ailments, such as sick headach and palpitation of the heart, to which we vaguely apply the epithet nervous, together with the kindred affections in the female sex, hysteria and chlorosis, sea bathing is beneficial when these have been mainly the effect of deficient exercise, late hours, and close atmosphere, and are accompanied with a hot and dry skin, and frequent pulse, or at least with daily paroxysms of this nature. According to Dr Bell, sea bathing has also been found of advantage in chorea, the second stage of pertussis, and in convulsive diseases generally, when accompanied with vascular excitement; in asthma from chronic congestion of the pulmonary mucous tissue; in aphonia, the febricula of the sedentary, or those who have laboured under more violent remittent fever; in certain cases of obstinate intermittents; and in individuals predisposed to rheumatic and catarrhal complaints. Its use he considers to be hazardous or injurious in inflammations of internal organs; in the incipient stage of consumption; in hemoptysis; in diseases of the skin, of an acute or subacute character, unless the surface be washed immediately afterwards with simple water; and in affections vaguely termed bilious. On no one of these points, will the space to which we are confined allow us to enter into details. The chapter concludes with some pertinent general remarks addressed to invalids visiting the sea shore.

Chapter VI. treats of the warm bath. The limits assigned to this form of bath by the author, it will be recollected, are from 92° to 98° of Fahrenheit; the mean between which will be 95°.

"On immersion in water at this last degree, it is believed that a large majority of our species will experience a decided, yet pleasurable sensation of warmth; and obtain the good effects, most generally attributed to this kind of bath. An approach to the upper limit, or that of 98 degrees, will be most grateful to those persons who habitually, or from accidental circumstances, have a skin possessed of little activity, coldness of the hands and feet, and slow circulation—while the lower limit, or that at 92 degrees, will be preferred by the sanguine and plethoric with active circulation and hot skin. Between 92 and 85 degrees will be the range of that uncertain kind of temperature usually designated by the term tepid or milk warm. I say uncertain in reference to the sensations produced by immersion in it. Imparting less luxurious enjoyment, and not so suscep-

tible of use in doubtful cases, such as in disease, and after extraordinary or exhausting bodily exertions, the tepid bath is, notwithstanding, that variety which is the best suited, as a means of public hygiene, for general bathing, and ablution and purification."

After insisting upon the importance of establishments for tepid bathing, open to all classes, as a part of public hygiene, and pointing out the intimate connection between its regular use, and the full enjoyment of personal health and comfort, the author adds,

"In these remarks on the necessity of preserving cleanliness by frequent and regular ablution, it is not intended that tepid bathing should be regarded as the only means of accomplishing this desirable end, to the exclusion of cold and warm baths, but simply, that in public and domestic hygiene, it is that variety which can be most advantageously used by mankind at large, without detriment or danger. A great many persons, in even vigorous health, cannot tolerate the cold bath for the shortest period, still less can they habitually use it with benefit. Even they who have accustomed themselves to it are in danger from the practice, if it be continued after any sudden diminution of vital energy, by whatever cause produced. The tepid bath is for the most part safe and serviceable to persons in health: and is often exceedingly refreshing to those who are excited, and the temperature of whose skin and the activity of whose pulse are augmented. Less sedative than the cold bath, the one in question is still capable of diminishing the excitement of the functions; while its immediately tranquillizing effects are followed by less marked and violent reaction, than ensue after immersion in cold water. The general resemblance between the cold and tepid bath is such, that in cases of fever with morbid heat of the skin and urgent thirst, but in which from primary feebleness of constitution, or protracted duration of the malady, the functions are so much worn down as to illy bear the powerful sedation of the former, the milder operation of the latter may be obtained with safety and benefit."

From what has been said on the effects of cold bathing, it will be readily understood, that when the grade of excitement is very moderate, and the powers of reaction weak, even tepid bathing will be followed by too great an abstraction of caloric, and feebleness of the system; it is in such cases, that the *warm bath* exerts its beneficial effects. The want of precision which has too generally been evinced by writers, when speaking of the different varieties of bathing, has caused the effects of the warm bath to be confounded with those resulting from the hot. Warm bathing has, consequently, been pronounced heating, or from notions of its mode of action on the living system, derived from the changes which dead animal

membranes undergo, when immersed in warm water, it has been considered to exert upon the body a relaxing influence. Neither of these presumed effects result, however, from the use of the warm bath, properly so called. This has been very successfully shown by Marcard, in his excellent work on baths. He cites cases, which occurred under his own eye, of recovered strength under the use of the warm bath; and he adduces Falconer's experience as identical with his own, in this respect. He also enumerates various instances of persons who resorted to the warm springs of Germany and Switzerland, spending many hours at a time in the bath, without any sensation of exhaustion on the one hand, or of excitement on the other.

It is asserted by this author, as well as by most other writers and experimenters on the warm bath, that when of a temperature under 96° Fahrenheit, it diminishes in ordinary cases the frequency of the pulse, and that this reduction is always in proportion to the previous frequency and deviation of the pulse from the natural standard.

The result of some experiments performed with the view of ascertaining the effects of the warm bath on the pulse, are detailed by Dr Bell, for the purpose of showing the erroneous conclusions which are liable to be formed, when, in judging of the influence of the bath upon the circulation, the very great difference in the frequency of the pulse between the standing, sitting, and recumbent position, is not attended to.

The inference from these, and other experiments on himself, the author conceives to be, "that the warm bath has a tranquillizing effect; and by allaying excessive excitement, and moderating excessive heat, it refreshes, and in a measure invigorates." In the experiments of Dr Parr, in a bath of 96° Fahrenheit, the pulse was at first slightly quickened, but soon became natural; the respiration, in the earliest period a little more rapid, soon became free and easy, and but little change was produced in the heat of the skin. In a bath of 98°, the pulse was slightly increased in quickness, and did not subside, the heat appeared to remain stationary; there was no sweat, though a free copious perspiration; the urine was not increased; some time after coming out of the bath, the pulse became slower than before its use.

The difference between the effects of the cold and warm baths, our author considers to consist in the former producing at once a powerful depression in the circulatory and nervous functions,

whereas "the latter is just in that relation with the nervous system to convey a sensation, soothing by its mildness, and active by its diffusiveness, and with the capillary system to invite blood into the smaller vessels of the extremities, which were of a temperature less than the water, and thus produce an equal yet moderate fullness and action of these vessels; an effect still further insured by the softened and diminished resistance of the external tegument, or cuticle. This equalized fulness of the cutaneous capillaries, is doubtless sympathized in, by the membraneous ones generally, and thus the heart's propulsive power is less, and its contractions are in consequence fewer, and at the same time more equable. The same cause renders respiration easier and slower." This latter effect may also be attributed to the diminished excitement of the brain. The pleasurable influence of the warm bath over the nervous system is proved by its tendency to induce sleep. The sleep here, remarks Dr Bell, is natural, and different from that fatal sleep—the torpor of the brain, from extreme cold, or from that forced sleep brought on by narcotic drugs. The soothing influence of the warm bath is, also, clearly evinced in the pleasant repose which it induces in the senses, the brain, and the muscular apparatus for voluntary motion, and in the harmonized action and balance of the internal or nutritive organs. We do not wonder, therefore, at warm bathing being included among the real luxuries of civilized life. The beneficial influence it exerts over the human body, by its indirectly invigorating effects, is incontestable.

The uncomfortable sensations, feelings of heat, thirst, accelerated circulation, and excited senses, consequent upon laborious exercise, or a long journey in warm weather, are all allayed or removed by the use of the warm bath; while, under the same circumstances, the cold bath would be attended with hazard at the least, often with decided injury.

"The habitually feeble and infirm, the nervous and excitable, and the cold and lymphatic constitution," says our author, "ought all to use the warm, rather than the cold bath." The same remark will apply, also, to those who are readily heated, and as readily cooled, who, though weak in their muscular movements, are prone to vascular or nervous excitement, and febrile movements from the least increase of mental or corporeal exercise and stimulation of the senses. The warm bath is likewise to be preferred by persons advanced in life, "whose functions preserve a tolerably equal

rhythm, but who have little energy of reaction under depressing agencies." Independently of its other effects, the warm bath is beneficial to the aged, by softening the cuticle, the increased induration of which, in advanced life, has a tendency to obstruct perspiration.

As a remedial agent the warm bath is adapted to an extensive range of diseases. According to our author, it will greatly mitigate, and often even remove, all morbid exaltation of sensibility, acute pain, alone or accompanied with irregular and convulsive action of the muscles. Its use he conceives to be particularly called for, in the convulsions of children and the hysterical affections of females, as well as in the varieties of colic, from the simple spasmodic to the bilious and painters' (colica pictonum). "Although," he remarks, "we may not entirely cure or arrest the disease by warm bathing, we shall mitigate its violence, and gain time for the application of other remedies."

In individuals peculiarly prone to have their vascular and nervous systems thrown into a state of morbid or irregular excitement by trifling causes of irritation, the warm bath is recommended as an excellent means of soothing the nervous and sanguineous system, and of preventing a convulsive habit from being formed. In children especially, the tendency to convulsive affections is very considerably lessened by the use of the warm bath. The latter, we are told, has also been found eminently serviceable in mania and mental derangement generally, in which extreme wakefulness and dry skin are predominant symptoms. Infantile cholera, as well as that of adults, when accompanied by much coldness of the surface generally, or of the extremities, often call imperatively for the use of this remedy.

"Cholera infantum requires a bath, the temperature of which shall be in the inverse ratio of the heat of the skin; the greater and more acrid the latter, the colder will be the water, and, *e contrario*, a cold skin, especially after the disease has been of some duration, will be more benefited by warm immersions or affusions."

The warm bath is an important adjuvant in the treatment of dysentery and diarrhœa, more especially of the chronic kind. It is a remedy adapted, also, to all the diseases of the respiratory organs, "due attention being had to the stage and accompanying phenomena, and the peculiarities of constitution of the sick person."

Asthma, of the nervous or spasmodic kind, is also greatly relieved by the warm bath.

"Organic affections of the heart, of which asthma is sometimes a symptom, cannot be better treated," Dr Bell remarks, "than by the regular use of the warm bath; which is more especially serviceable if the disease have ensued on the disappearance of chronic cutaneous eruptions or ulcers."

The other diseases enumerated by the author, as those in which the warm bath is beneficial, are inflammations, especially when chronic, of the liver, and of the kidneys. Catarrh of the bladder, amenorrhœa, diseases of the skin, the forming and advanced stage of fevers, the cold stage of intermittents, eruptive fevers, rheumatism and gout, mercurial disease, paralysis, &c. For the details in regard to the use of the bath in each case, we must refer to the work itself.

When had recourse to as an agent of hygiene, the proper time for using the warm bath, as a general rule, is when the stomach is empty, and after fatiguing exercise. The continuance in the warm bath will be considerably more protracted than in the cold. In the former we may remain, for the purposes of refreshment, from half an hour to an hour. Many take a pleasant sleep in the warm bath. The chapter closes with some interesting observations on the usages, as to the time spent in the water at some of the thermal springs in Europe, and the mode of preparing a warm bath for the sick.

The hot bath forms the subject of Chapter VII. We shall be extremely brief in our notice of this portion of the work, not because the author's remarks are devoid of interest or instruction, but from the hot bath being seldom intentionally resorted to, in this country at least, for hygienic purposes, for which, in fact, it is, as he states, but illy adapted; and from its being applicable as a therapeutic agent to a much less extensive range of cases than either the cold or warm bath. The space, also, we have already occupied, and our desire to notice the remaining chapters of the work, render such conciseness indispensable.

A hot bath is one in which the temperature of the water exceeds 98° Fahrenheit. It exerts a decidedly stimulating effect upon the individual immersed in it, evidenced by the increased redness of the skin, the acceleration of the pulse, turgescence of the superficial vessels, and increased frequency of respiration. The face soon becomes bathed with a copious sweat, the arteries of the neck beat with more frequency, the mind becomes obtuse and inattentive, and even vertigo and apoplexy have been known to supervene. If pro-

longed to excess, the hot bath produces invariably an enormously increased discharge of the perspirable matter. A bath of very high temperature is, consequently, intolerable to those of delicate habits, it being a stimulus disproportioned to their exquisite sensibilities, while to those of robust and active habits it becomes injurious, by adding the stimulus of caloric to the action of those powers which induced and maintain the excitement of the system at too exalted a grade.

"The few circumstances under which hot baths can be of any utility, demand, at least, a certain degree of inertia on the part of the subject on whom they are tried, which may be either the accompaniment of a phlegmatic temperament, or the consequence of protracted disease, without which they can by no means be tolerated."

Dr Bell subsequently remarks, that the sanguineous, the robust, the plethoric, those with full large heads, and who are inclined to drowsiness after any little exertion or after a meal or who are liable to spitting of blood, or whose skins are acutely sensible to heat are, in general, those who should avoid the hot bath.

"We should probably be still more correct and better understood," he adds, "if we were to say, that persons in health ought never to make use of the hot bath alone, without subsequent refrigeration; nor ought those liable to, or at all suffering under fever, with acute pain or hemorrhage of any kind, to have recourse to it. The hot bath is, on occasions, a useful remedy in the hands of a physician, but it requires great caution in prescribing it, and great discernment as to the circumstances under which it should be used, as well as the duration of the period of each bathing, and the precise temperature of the bath. The cases to which this remedy is adapted, are those of inertia, torpor, sluggish circulation, dry and cold skin, with feebleness of muscular movement and a low grade of sensation. But here let us avoid confounding the state of the system naturally feeble and phlegmatic, or worn down by age and protracted disease, with the languor which follows acute inflammation or pressure of blood on the brain, causing disinclination to motion, or in the lungs giving rise to slow stertorous breathing or asthmatic panting. In the first class of cases, the hot bath would be serviceable; in the latter prejudicial."

The diseases particularly enumerated as those coming within the limits of the first of these classes are bronchitis and pneumonia occurring in old people who have been greatly exposed to cold and damp, badly fed, and of intemperate habits; cases of croup and bronchitis occurring in children, and accompanied with complete

torpor of the whole capillary system, evinced by coldness of the surface and extremities and of the breath, hurried and laborious respiration, &c.; the cholera of adults, when the skin, particularly of the extremities, is of an icy coldness, pulse small and fluttering, features shrunk, and all the symptoms of approaching dissolution present; the latter stage of infantile cholera, and certain chronic affections of the skin. In stiffness of the joints from old sprains, and from chronic rheumatism and gout, the hot bath exerts a marked and beneficial effect.

In a former part of this chapter we are presented with some interesting observations on the impunity with which the living body supports the depressing effects of cold, when in a state of febrile excitement, whether temporary, as when caused by the hot or vapour bath or internal stimuli, or more lasting as in disease.

The next chapter (Chapter VIII.) treats of vapour baths. These are either simple or medicated. The first consisting of merely hot dry air, or simple watery vapour; the second holding in solution or suspension various medicinal substances. The effects of these baths vary according as the whole body is immersed, or only the trunk, the head being excluded so as to allow of the access of the common atmospheric air for breathing. "The partial application of vapour arising from hot water exerts nearly the same effect as a fomentation of the part to which it is applied."

"The temperature of a simple vapour bath, the product of warm or hot water, will vary from 90° to 150° of Fahrenheit, according to the heat of the water, or the space through which it is allowed to be diffused, and the time which has elapsed since the first formation of the vapour." When the whole body, or the trunk only is surrounded with vapour exceeding the animal temperature, a portion of the water of which it is composed is taken up by the absorbents, the remainder becomes condensed in drops upon the skin. The entire surface, after a time, becomes red and covered with a profuse sweat. The absorption of the watery vapour is in the commencement so considerable, that the fluid is not allowed to condense on the surface until the absorbents are completely filled. When at the same time the body is exposed to the vapour, it is allowed to be inhaled into the lungs, the stimulating effects of the bath are increased, and the amount of fluid absorbed is greatly augmented. The distension of the pulmonary capillaries which takes place, moderates in some degree the hurried respiration

which the stimulus of heat tends naturally to produce. From the augmented amount of blood in the cutaneous and pulmonary tissues, accompanied, also, by increased exhalation, the volume and frequency of the pulse become increased. "The brain, participating by its membranes in the state of the lungs and skin, is fuller of blood than usual, and there is a tendency to sleep, or at least a general feeling of languor and indisposition to bodily exercise." Such Dr Bell enumerates as the effects of vapour at a few degrees, six or ten, above the animal heat, and in which the body has not been long immersed.

Our author presumes that the different effects of the vapour bath as a hygienic agent are to be explained upon the somewhat opposite action of the caloric, and the moisture of the vapour; the first being a stimulant, the latter soothing and sedative. "Where," he remarks, "the dose of caloric is not great, its stimulating action will be mitigated by the influence of the moisture which may even predominate and give rise to soothing and sedative effects." The aqueous portion of the vapour softens and penetrates the cuticle more completely than simple immersion in warm water. This softening of the superficial tissues allows of a greater expansion of the vessels of the cutis, and diminishes, in consequence, the state of tension to which the nervous papillæ might have been subjected. The simple aqueous fluid which is largely absorbed becomes an agreeable diluent of the more stimulating fluid which may have been in the vessels previously; the nerves, also, are pleasurably affected, as in the instance of the warm bath, by this mild vapour applied to their extremities. Hence, even should the caloric of the vapour invite a greater afflux of blood and fluids to the minute vessels of the skin, the entire effects of the vapour bath are of a soothing and sedative rather than stimulating or irritating character. The increased secretion which takes place from the skin when not excessive, is likewise often salutary. The vapour bath is chiefly serviceable, however, in restoring the due proportion between the secreting and absorbing vessels, "accelerating their circle of functions, and without undue heat or excitation causing a renewal, as it were, of the cutaneous system, that is, of the tissues which compose it." The higher the temperature of the vapour, the more decidedly stimulating will it be, and the greater, in consequence, the cutaneous excitement and duration of the heat of the system, even to the extent of simulating a febrile paroxysm.

"Nearly analogous effects to those produced by the moist vapour bath," it is added, "will ensue on exposure to a dry vapour, or air of a room heated by flues, as in the Asiatic baths; and the application subsequently to the skin of water, either by affusion or by aspersion and sponging."

The remarks of the author, interspersed throughout this chapter, on the modus operandi of vapour applied to the skin under various states of the system, are all in the highest degree important; we regret that want of room prevents us from entering into a fuller notice of them.

Our information on the remedial effects of vapour bathing is very limited.

"The physicians of Great Britain, France, and Germany," observes our author, "who have so largely contributed to swell the stock of medical lore, and practical medicine, have done comparatively little towards enlightening us on the therapeutical value of vapour."

The few publications which have appeared on the subject, are passed under review by Dr Bell. They are principally the empirical work of Dominiceti; the treatises of Sir A. Clark, Dr Blegborough, and Dr Gibney; the experiments of Basil Cochran; the short but useful essay of Marcard; Assilini's work on artificial vapour baths; the chapter of Andria on the *stufe* of Ischia; and a paper or two in the medical periodicals of our own city. From these, however, the actual amount of information to be collected, though in itself interesting, is extremely small. After enumerating the cases in which Andria and Assalini found the application of vapour to be beneficial, Dr Bell enumerates some of those diseases in which its use appears to be attended with the most decidedly good effects. He states that in cases of dry and squamous herpes, occurring in individuals of a sanguine temperament, and other chronic eruptions of the skin, the vapour bath has been found useful. It is, likewise, an excellent remedy in all those cases in which the skin is dry, harsh, and scaly, and prone to chap, especially during damp and cold weather. In syphilitic eruptions and ulcerations, moist vapour alone, or in alternation with sulphurous and mercurial fumigations, will accelerate the cure. According to Assalini, the application of vapour has been found, also, to discuss tumefactions of the lymphatic glands, especially those of a scrofulous nature along the neck. It is, likewise, a valuable remedy in those trouble-

some and painful affections of the joints, whether produced by gout, rheumatism, syphilis, or the excessive use of mercury. Chronic glandular inflammations, as of the liver and pancreas, and tumefactions of the spleen, are often greatly relieved, and at times completely cured, by this kind of bath. It is equally beneficial in chronic affections of the digestive passages, as diarrhœa, dysentery, and certain cases of dyspepsia. It has also been employed with decided advantage in tetanus, various cases of muscular rigidity, in cases of suspended animation, in puerperal peritonitis, and towards the conclusion of eruptive fevers, where the skin is dry and rough. It is recommended strongly by the author as a remedy in delirium tremens.

The preceding remarks in relation to the curative effects of the vapour bath, have especial reference to that form of it in which the head of the patient is excluded from the bath, so as to allow of his breathing the common air of the atmosphere. In a long list of diseases, the efficacy of the remedy is increased by entire immersion, so that the vapour is not only applied to the skin, but inhaled also into the lungs, and thus applied to their mucous surfaces. This is particularly the case in catarrh, bronchitis, croup, asthma, and in a certain stage of measles and small pox, attended with dry and parched skin. In inflammation of the throat and air passages, and other phlegmasia, the inhalation of vapour at 90° Fahrenheit is recommended by Assilini; or when the excitement was less, and the disease of a chronic character, he raised the temperature to 100°. Dr Bell believes, however, that we may agree in general with Marcard, that vapour baths under 96° have but little activity.

A short notice is next given of the experience of Dr Coxe, of this city, as to the effects of the vapour bath on various affections of the system, as given in a communication contained in Vol. IV. p. 20—27, of this Journal.

Dry sulphurous fumigations are included under the head of vapour baths. These may be applied by an appropriate apparatus to the skin of the whole body, excepting the head, or confined to a part only. By Assalini, they were employed in nearly all the varieties of disease in which the moist vapour bath had been; but with somewhat more reserve in sthenic habits, or where there was much general or cutaneous irritation. In the itch, they have been found particularly successful. In the secondary forms of syphilis, with ulcerations of

the throat, blotches of the skin, nodes, and pains of the joints, according to our author, the treatment by alternate sulphurous fumigations and moist vapour, will be attended with complete success. The same course, also, will be found advantageous in mercurial or scrofulous ulcers, associated with depraved digestion. For a notice of the diseases in which the vapour bath and fumigations were used successfully by Assalini, as well as the conclusions of the medical jury of Paris on the efficacy and advantages of sulphurous fumigations, we must refer to the present chapter of Dr Bell's treatise: want of space prevents us from noticing them.

Some remarks follow on the inhalation of iodine and of chlorine, in certain pulmonary complaints, as recommended by Murray, Scudamore, Bertin, Ganal, and others. This subject we pass over, as it is to be fully considered in a review, in the present number, of the publications of these gentlemen. The chapter closes with a description of the apparatus for vapour bathing, and a reference to the circumstances under which the use of the vapour bath may prove injurious.

Chapter IX is devoted to the subject of douching, or the spout bath. This method of local bathing is almost entirely of modern use, and although in a great measure neglected by the English physicians and those of our own country, we have the almost concurrent testimony of the most enlightened practitioners of Europe, in favour of its singular power and utility, in a number of local and general diseases of a very intractable character.

Douches act on the same principles which govern the effects of the other baths; and hence they are susceptible of the same division as the latter, into warm and hot. Their efficacy is referrible to the temperature of the water employed, rather than to the mechanical impression, as some have imagined.

Cold douches are useful when we wish to procure a diminution of excessive excitement, as in the acute inflammation, or predominant affection of some particular organ, as well as in all those circumstances in which we wish to lower the excitement of a part, by a sensible abstraction of heat. The great advantage attending their employment is, that in such cases of excessive excitement of a particular organ, we can direct the cold to the part, without wetting the rest of the body; and still more, we can, if necessary, use the warm bath at the same time; or the head being the part to

which they are applied, without losing time, we can apply counter irritants, sinapisms and blisters, to the extremities. "Hot douches are principally had recourse to in diseases of an asthenic nature, and which from their duration acquire the name of chronic."

The whole of this chapter is deserving of an attentive perusal. The importance of local bathing in a large circle of diseases, and the very limited extent to which it has been employed in this country, require, on the part of most members of the profession, a patient study of the manner of using it, the rules to be used in its application, the morbid conditions of the system in which it is beneficial or otherwise, and the circumstances under which a diminished or increased temperature of the water is demanded. On each of these points much useful information, in a condensed form, will be found in the work under review. The chapter concludes with some observations on the alleged advantages of shower bathing.

We can afford room for only a very brief notice of the second part of Dr Bell's treatise, or that devoted to *mineral waters;* a subject, nevertheless, the importance of which is but little inferior to that of bathing. In this country, where mineral springs abound, many of which have been for years fashionable places of resort during the summer season, their application to the cure of diseases has been, in a very great degree, overlooked; or, perhaps, to speak more correctly, strict attention not being paid to the relative value of the different springs, the chemical properties and temperature of their respective waters, the class of cases to which, in consequence, each one is best adapted, as well as the proper rules to be observed in their use, we have derived much less advantage from them as remedial agents, than has been derived from the mineral springs in the different parts of Europe which correspond with our own in their physical and chemical qualities. For an invalid to resort to a mineral spring merely because it is the fashion, and drink of its waters, whatever may be the complaint under which he labours, or the condition of his system at the time, with no other preparation or precautions than such as are suggested by prejudice or dictated by empiricism, is far more liable to be productive of injury than of benefit. At many of the European springs physicians constantly reside, under whose directions the waters are made use of; while, in appropriate buildings, *Maisons de Santé* and Hospitals, the sick and infirm are afforded every comfort and accessary means of relief which their respective cases may demand. The advantages to be de

rived from the mineral waters of our country would be increased to a very great extent did an arrangement of a similar kind exist at some of the most frequented springs. It is important, at least, that every physician should be well acquainted with the medical properties of these springs, and the manner in which their waters are best applied for the cure of diseases; so as to be enabled, when it is considered advisable for his patients to resort to them, to lay down precise rules for their guidance. An account of the most noted mineral waters of the United States, with the morbid conditions of the system in which they are found to be most beneficial, has long been a desideratum, and although in the work before us the subject is treated of with great conciseness, the author has, nevertheless, presented a very full and useful compendium of all the leading facts and principles connected with it.

In the first chapter he treats of the accidental discovery of the virtues of mineral springs; the great estimation in which they were held by the ancients, especially the Greeks and Romans; the neglect into which they fell upon the decline of the Roman empire; the renewed attention which was directed to them towards the close of the 15th century by the Italians; and the subsequent care bestowed upon bathing establishments at different mineral springs by the French. The industry of the physicians of Europe soon became engaged in the investigation of the medical properties of the mineral springs of their respective countries, while the chemist was busily employed in determining the ingredients which enter into their composition. We have, in consequence, been presented with much useful information in regard to the virtues and qualities of the mineral springs of the old world; nor have those of our own country been entirely neglected, and we feel persuaded that the time is not far distant when our knowledge in relation to them will be as complete as it is in relation to the former.

Previously to entering upon the consideration of mineral waters, strictly so called, Dr Bell offers a few remarks upon the virtues of common water, both as an article of diet and as a medicine; in concluding which, he observes—

"We are constrained to admit that there is hardly a disease cured by mineral water, that has not been removed, or greatly mitigated, by free potations of common water.

"While I concede, to a certain extent, the sameness of operation and effects between common and mineral water, I cannot, however, admit their entire identity, as remedial agents. One very obvious

difference immediately strikes us, namely, the utility of common water, or beverages consisting almost exclusively of water, with some bland substance, in fever and acute diseases; whereas mineral water is in such cases not simply of equivocal benefit, but absolutely hurtful. Again, in various chronic diseases, distinguished by inertia, a languid state of the digestive apparatus, and abundant mucous secretions, common water will be of little benefit; when, on the contrary, a fluid with saline and mineral impregnation will prove of decided efficacy. Common water acts indirectly on the organs of the living body by neutralizing noxious or acrimonious matters, and facilitating their egress. Mineral water has a decided and independent action on the same parts, particularly on the mucous surface of the stomach and intestines, and on the circulatory apparatus by absorption. I am justified, then, from all that has been advanced, as well in the first part of my subject, on baths, as in that just discussed, in laying the following propositions:

"1st. That mineral waters, used for bathing, or douching, on a sound cuticle, act mainly in virtue of their caloric.

"2dly. That when taken into the stomach or intestines they have a double operation; the one common, and generally uniform, depending on their basis, or their pure watery vehicle; the other proper and peculiar, being the effect of the saline and mineral substances held in solution.

"3dly. That if used under the form of bath or douche, the action of these chemical principles will have little or no effect except upon those parts which are deprived of their natural covering, or skin—of course no effect on the general system, except through the parts thus denuded."

A brief summary of the modus operandi of mineral waters follows. Precautions are then given against a hasty or excessive use of these waters by invalids, their effects varying with the state of the system and the quantity drunk, as well as with the intervals between drinking. The chapter is closed by a series of remarks enforcing the necessity of attention to all the other means of preserving health, while at the springs—sleep, clothing, diet, exercise, and amusements, with some particulars as to the food of the invalids who visit these places.

The second chapter relates to the division of mineral waters, and contains an enumeration of the principal thermal springs of the United States and of Europe, with the chief mineral springs agreeably to the classification adopted by the author. Dr Bell classes all mineral waters under four heads. A. Hydrosulphurous, or sulphurous. B. Acidulous, or carbonated. C. Acidulated ferruginous, or chalybeate. D. Saline.

The third chapter treats of the sulphurous or sulphuretted waters and their remedial value in various diseases. They have been found, we are informed, efficacious in relieving congestions of the veins and in chronic inflammations, either in the viscera or on the surface of the body. They purge without debilitating, and in the treatment of hepatic affections are deemed superior to mercury. Their efficacy, likewise, in chronic rheumatism and gout is well attested. To derive their full effects their use must be persevered in for a length of time, excepting when they produce some degree of febrile irritation, in which case they should be discontinued. In the diseases of the skin of a chronic character, the sulphurous waters are considered to be superior to all other remedies. They have been found useful, also, in correcting the effects of intemperance, in dyspepsia, hypochondriasis, habitual costiveness, jaundice, hemorrhoids and worms; we are cautioned, however, against the stimulating effects of these waters, especially in individuals labouring under decided phlegmasiæ, and fixed irritation in a part, as well as in those predisposed to, or actually suffering under hemorrhages. In this latter case, the sulphurous waters ought to be very weak, or taken with milk. The hot sulphurous waters of Bareges and Aix la Chapelle are among the most celebrated on the continent of Europe for their medical virtues. Formulæ are given for imitating these waters. In this country we have the White Sulphur Springs of Virginia, justly celebrated for their efficacy in various intractable diseases. The water of these springs, an analysis of which is given, has been found a very excellent remedy in hepatic affections and chronic diseases, following bilious fever. In cutaneous diseases and chronic rheumatism, especially, their use is to be alternated with warm and hot bathing. The Red and Salt Sulphur Springs of Virginia are likewise celebrated; the first for their efficacy in chronic affections of the abdominal viscera, and the latter for their good effects in pulmonary diseases simulating or ending in consumption, especially in the early stages. Numerous sulphurous springs exist in the western states, with a brief notice of which the chapter concludes. We have noticed barely the outlines of this chapter; for particular directions for the use of the waters of which it treats, adapted to particular cases of disease, and the circumstances under which their internal or external use, or both, will be demanded, the reader must consult the work itself.

Acidulous or carbonated waters (Chapter IV.) These waters are characterised by the predominance of free carbonic acid gas, which imparts to them a lively and somewhat stimulating taste; these peculiarities disappear in proportion as the gas escapes.

"The medical use of this class of waters is most advantageously displayed in allaying the thirst and heat of feverish action which accompanies a disturbed state of the stomach and inflammation of the liver and other viscera, and in subduing irritation of the kidneys, checking copious discharges—diarrhœa and fluor albus, &c. They are useful in cases of chronic or sub-acute inflammation, in which the sulphurous or chalybeate water, or even the compound saline, would prove too exciting. By thus allaying morbid irritation, and gently restoring the functions of the stomach and intestines, they have credit for a tonic power, which is thought to be displayed in their occasionally restoring the suppressed menstrual discharge, and dispelling the feelings of languor and melancholy so often the concomitants of dyspepsia. They sometimes cause unpleasant drowsiness and flatulency, and in apoplectic habits are to be used with caution."

The artificial mineral waters of the shops belong to this class. The best example of a natural spring of carbonated water is the Sweet Springs in Monroe county, Virginia. Between this spring and the Bristol *hot* well, as it is erroneously called, of England, there is a very great similarity; the temperature of both is 73° of Fahrenheit; in the former, however, there is discovered a slight trace of iron, of which the latter is entirely free. The diseases in which the water of the Sweet Springs is found beneficial, either taken internally, or used as a bath, are examined in detail by our author; into a notice of these our limits will not permit us to enter.

The two most celebrated thermal acidulous springs in France are those of Mont D'Or and of Vichi. "The former were known to the Romans, who erected several buildings on the spot, the remains of which are still visible." The waters of both these springs may be imitated by art, the proper formulæ for which are given by Dr Bell.

Of the cold acidulous mineral waters, those of Seltz in Germany are the most noted. "These waters are an article of commerce in the cities along the Rhine, and are in common use at table, either alone or, what the *bon vivant* prefers, mixed with the lighter wines." Directions are given for their artificial production.

Chalybeate waters are the subject of the fifth chapter. These waters, as their name implies, owe their characteristic properties,

chemical and medicinal, to their containing oxide of iron, which is almost uniformly held dissolved by carbonic acid; the acid being usually in excess. Their effects are modified by the quantity of carbonic acid in excess, and of saline ingredients.

The individuals by whom the chalybeate waters are resorted to with the greatest benefit, are those exhausted by disease, and whose chief complaint is languor, with cool skin, and a pale and moist tongue. They are useful, likewise, in restoring the digestive function, when its inactivity is not dependent upon irritation of the stomach, or of the liver.

"They will be found useful," Dr Bell remarks, "in the sequelæ of hemorrhages and mucous discharges, provided the evacuation has been such as to cause general debility, and does not leave behind it a point of irritation, to which general excitement causes a speedy afflux of fluids, with augmented sensibility. This remark applies to hemoptysis, and menorrhagia, fluor albus, diarrhœa, chronic catarrh of the bladder, and old gonorrhœa; also protracted autumnal intermittents and associated dropsical effusions. In the second stage of scrofula, chalybeates have been used with benefit. For the cure of amenorrhœa and the removal of sterility, they have been always celebrated."

The most celebrated of the thermal chalybeate springs are those of Bourbon L'Archambault, in the department of the Allier, in France. They were known and highly prized by the Romans. Of the cold chalybeate springs the most noted in Europe are the Spa, in the kingdom of Belgium; Pyrmont, in Westphalia; Forges, twenty-five leagues from Paris; Passy, near that capital; Tunbridge and Brighton, in England. In the United States there are a great number of chalybeate springs; the principal of which are those of Ballston and Albany, in the state of New York; Hopkinton, in Massachusetts; Bedford, Pittsburgh, and Frankfort, in Pennsylvania. Virginia, Kentucky, Tennessee and Ohio, can also boast of waters of the same class. Most of the above springs are minutely described by Dr Bell, and an account given of their chemical properties and medicinal virtues. Formulæ are, also, furnished for the artificial imitation of the various chalybeate waters.

Saline mineral waters are the subject of the next chapter (Chapter VI.). "Under the class of saline mineral waters are comprised those in which there are neutral salts enough to produce a marked and generally purgative operation. The salts most usually present are the sulphates, muriates and carbonates—such as

the sulphates of magnesia and soda, muriates and carbonates of soda and lime. The proportion of aërial matter is seldom large."

These waters have no direct effect upon the sanguiferous and nervous systems. Their efficacy in disease depends chiefly on their stimulating the entire gastro-intestinal mucous surface, as well as the pancreas and liver, to a free secretion of their respective fluids. Being, likewise, absorbed and carried into the mass of the circulating fluids, they in this manner act on the entire capillary tissue and the various secretory organs of the body. They produce less irritation of the stomach and bowels than our ordinary purgatives, while their cathartic effect is greater than could be anticipated from the amount of their saline impregnation. Administered in cases in which there exists no marked irritation nor phlogosis of the mucous membrane of the stomach and bowels, they have been found beneficial in relieving congestions and irritations of the more remote organs, as well by the evacuation of fluids, as by the derivation of blood from them to the superficies of the vena portæ. "Affections of the head, chest, skin, and joints, will all be severally benefited by the judicious use of the waters in question." Under their use, there takes place, also, an increased secretion from the kidneys and skin. This effect more usually follows, however, smaller quantities of the waters than are drunk to produce purging. It is in consequence of their gently promoting the functions of the skin, especially if moderate exercise and the occasional use of the warm bath be adopted in conjunction with their ingestion, that we may explain the beneficial effects of the saline mineral waters on the mucous surface of the lungs, and on the serous, synovial, and fibrous membranes—as in chronic catarrh and asthma, rheumatic affections of the joints and limbs, &c. In consequence of the little irritation they produce in the gastro-intestinal mucous surface, they do not impede, but rather augment the powers of digestion.

Of the thermal saline springs the most celebrated are those of Plombieres, Bourbonne-Les-Bains, Balaruc, Bagnéres-Adour, Bourbon-Lancy, in France; of Carlsbad and Töeplitz, in Germany; of Lucca, San Julian, and Monte Catini, in Italy; in the United States we have the Hot Springs of Virginia and the Warm Springs of North Carolina. The most noted of the cold saline springs are the Cheltenham and Epsom in England, and Seidlitz and Seydchutz in Bohemia. The Pyrmont waters sometimes classed under this head are noticed by Dr Bell under the head of chalybeates, to which

they strictly belong. A tolerably full sketch of the peculiarities of each of these mineral waters is given, with their chemical composition and medicinal powers, and the rules to be observed in their use.

"Of the saline mineral springs of the United States, those of Saratoga," remarks our author, "are by far the most celebrated. The composition of these waters is such, that they might, if we merely had regard to the abundance of carbonic acid which they contain, be placed with the acidulous class; or, were we influenced by the fact of their holding iron in solution, we should consider them as chalybeates. In placing them under the saline head, I have been more influenced by the fact of their free action on the bowels, than by the nature of the saline ingredients, in none of which, however, do we recognize a regular purging salt, such as the sulphate of soda, found in the Cheltenham waters, or the sulphate of magnesia, found in those of Seidlitz, or in smaller quantities in those of Harrowgate, or of Harrodsburgh, Kentucky, or of the White Sulphur Springs, Virginia."

Want of space prevents us from noticing the very full account given by Dr Bell of the saline mineral springs of this country, and from the same cause we must pass over what he says on the subject of sea water, and its efficacy when used internally as a medicine.

The seventh and concluding chapter is devoted to the subject of the simple thermal waters. The efficacy of these, when taken externally or used as a bath, Dr Bell attributes mainly to temperature, aided, in the former case, by dilution.

"The series of phenomena," he remarks, "produced by the application of external, are repeated on the application of internal warmth, but with an augmentation of energy and diffusiveness, in proportion as the influence of the stomach over the brain and heart is more immediate and direct than the sympathy between these organs and the skin. If to the effects of nervous excitement caused by warm water acting on the sentient surface of the stomach, be added those of vascular fullness, caused by the absorption of a large quantity of simple fluid, we can easily understand how drinking thermal waters should be attended with such marked benefit in numerous chronic maladies."

After enumerating the principal affections in which the internal use of simple thermal waters, and regular bathing by immersion in the same, are found beneficial, the author refers to the reputed efficacy of the Malvern waters in various diseases, while in fact they contain not more than three or four grains of foreign or solid matter to the gallon. The good effects of these waters, therefore, as well as those of Buxton, Bristol, and Bath, in England, and of Le-

banon, the Warm and Hot Springs in Virginia, are mainly explicable, as has been already remarked, on the principle of dilution and temperature. Not a little, however, and perhaps the chief benefit derived in the visits of the invalid to the above springs, has been by using the waters as a bath. The chapter contains a brief notice of the Warm and Hot Springs of Virginia, and of the great inducements to visit them, arising from their number, the variety of their mineral impregnations, and the natural beauties presented by the upper and middle section of the state; and concludes by alluding to the advantages of travel to the invalid as a preparative for the use of the waters of the springs, while on occasions it will aid in completing a cure happily commenced by bathing in, and drinking of, the latter.

In our notice of the work of Dr Bell, we have confined ourselves almost entirely to an analysis of its contents, believing that in this manner we can best introduce our readers to a knowledge of the subjects which it embraces, and of the author's method of treating them. The connexion of Dr Bell with the editorial department of this Journal, has prevented us from indulging, in the course of the review, in eulogistic commentary, but, in concluding, we must be permitted to say, after a very minute, cautious, and unbiassed examination of the work, that it contains, in a condensed form, all the leading points of information, so far as they could be obtained, which are required by the physician, relative to the important subjects of which it treats.

ART. XIII.—THACKRAH ON THE EFFECTS OF ARTS, TRADES, &c. ON HEALTH AND LONGEVITY.

The Effects of the Principal Arts, Trades, and Professions, and of Civic States and Habits of Living, on Health and Longevity, with a particular reference to the Trades and Manufactures of Leeds; and Suggestions for the removal of many of the Agents which produce disease and shorten the duration of life. By C. TURNER THACKRAH. *From the London Edition with Improvements, pp.* 180, 18*mo. Philadelphia*, 1831. *Literary Rooms, No.* 121 *Chesnut Street. Office of the Journal of Health and Family Library of Health, &c. Henry H. Porter, Proprietor.*

The subject of the influence of the different arts upon health, is at this time of peculiar interest to the people of the United States. In almost all parts of the country, manufactures of various kinds are springing up and extending themselves with unparalleled rapidity; but being yet in their infancy, they are not marked by that inveteracy of abuse, which characterizes the great establishments of England, and some other European countries. There, in the vast competition both of labour and capital, every other consideration than that of cheapness of production has been overlooked. As no counteracting principle existed in the intelligence of the lower orders, the workmen have come to be regarded as machines; and the question of their health and comfort, resolves itself into a meré calculation of profit and loss. To obtain as great an amount of labour at as little cost as possible, is the sole object of the manufacturer; and the fatal influence of long confinement, unhealthy exposure, and meagre diet, is of little consequence, so long as a superabundant population affords the ready means of supplying vacancies. But the practical operation of this system has been to collect together great masses of unhealthy, ignorant, corrupt, and miserable people, who, though in times of great commercial prosperity they may be content to drag on their toilsome existence without loud complaints, become under opposite circumstances, a source of great and constant anxiety, often break forth into open outrage, and, at all times, afford to designing men a powerful instrument of political commotion. Though the benevolent manufacturer mourns for this degradation of the lower classes, and joins with those who

are more selfish, in dreading its future consequences, both to individuals and the community, yet the evil appears so inveterate as almost to discourage any attempt at relief; and the present state of things will probably continue, with little amelioration, till, by some terrible convulsion, society shall be resolved into its elements, and an opportunity be thus afforded for a new, and more just, as well as politic arrangement. For the people of the United States it is highly important to take warning by the example, and before it is too late, to interpose checks to the natural influence of unrestrained competition in manufactures upon the character and condition of the working classes. So far as concerns their morals and education, the subject has no especial relation to the medical profession. On these points, we are individually bound to feel and to act only as members of the community at large, and we leave their discussion to works of a more general character. But whatever relates to the health of the labourer, comes peculiarly within our province; and it is our professional duty to do as much as lies in our power, not only to impress upon the manufacturing public the great importance of attention to the physical condition of the workmen, but also to investigate and make known the favourable or unfavourable influence, exerted by particular pursuits, upon this condition. Manufacturers will thus be enabled to remove, modify, or counteract those causes, which, in the several branches of their business, operate deleteriously upon the health; and when the processes of any particular art are irremediably noxious, its products may continue to be derived from abroad, and its introduction into the country be thus postponed or altogether avoided. Even where evils already exist, they have seldom taken so deep a root that they may not be eradicated by the combined efforts of the master and workman, when properly enlightened in relation to them.

From the above considerations we are much pleased with the republication, in our country, of the work, the title of which is at the head of this review. The very causes which render such a work peculiarly desirable here, at the same time render its composition impracticable. It describes evils, the particulars of most of which we cannot personally investigate, because they exist in but a very small degree among us, but with which it is highly important that we should be acquainted, in order to prevent their introduction. We must, therefore, resort to foreign sources for information; and the little book before us is peculiarly valuable, as its contents are

the result of personal observation and research on the part of the author. The town of Leeds, to which the inquiries of Mr Thackrah were chiefly confined, is one of the largest manufacturing cities of England; and in the great variety of arts practised in it, affords, perhaps, as good an opportunity as any other place, for investigating the influence of such pursuits upon the human system. The author appears to have taken much pains, by personal inquiries and examination, to acquire correct information; and though we cannot admit without hesitation the accuracy of all his inferences, it gives us pleasure to state, that he has accumulated a mass of facts which render his work of great practical value. We do not intend to lay before our readers all these facts, nor even all among them which might be considered most important; for, independently of the injury we might do to the publishers, whose zeal in circulating useful knowledge deserves better at our hands, we should not find space without encroaching too largely upon that allotted to other subjects. If by noticing the general plan and some of the most prominent details of the work, we shall convey to our readers such an impression of its value as to induce them to peruse it attentively for themselves, and to promote the general circulation of the knowledge which it contains, we shall gain the end we propose, of contributing to the public welfare.

The author divides the inhabitants of Leeds into four great classes; 1. Operatives; 2. Dealers; 3. Master-manufacturers and merchants; and 4. Professional men. Each of these classes, and the sub-classes respectively included in them, he considers severally in relation to "the atmosphere they breathe, the muscular exercise they take, the postures of body they maintain, the varieties of temperature and humidity to which they are exposed, their diet and habits of life, and finally, in some classes, the state of mind." By this arrangement he follows in the steps of his own investigations, and presents us with more lively and impressive pictures than if, after having acquired his materials, he had thrown them into a more compact and artificial form; if, in other words, instead of pursuing men through all their avocations, and marking the effects of these avocations upon their health, he had taken up the subject of the several agents injurious and beneficial, and treated of their general influence. By the latter plan he might have avoided numerous repetitions, but would have made a less interesting and impressive, and therefore less useful work. In order, however, to present the subject in its various

points of view, he gives us, by way of summary, towards the end of the volume, a brief account of the operation of the real and supposed noxious agents separately considered; and having followed this by a few observations on the means of preserving health, closes the work by offering "hints for the choice of employments and situations calculated for the respective constitutions of young people."

Of the labouring classes, the author first treats of those *whose habits are active, and whose employments are chiefly in the open air.* Most of these he finds to be healthy unless addicted to intemperance or badly fed. Exposure to changes of weather appears to have little injurious influence. The *butchers* are usually "plump and rosy," and notwithstanding the presumption of the English law, and the pretensions of certain theorists, are "generally cheerful and good-natured." Living well, and generally prosperous, they are subject to few ailments. The effluvia of the slaughter house, though often offensive, are not apparently hurtful, and are often decidedly useful. "Consumption is remarkably rare among the men employed in the slaughter-house." They are also less subject than others to the influence of epidemics, in consequence, as the author supposes, of the atmosphere which they breathe resisting the changes which give rise to these diseases. But notwithstanding their general healthfulness, butchers are not longer lived than persons engaged in most other employments. Their excessive use of animal food induces a state of plethora which is unfavourable to the attainment of great age.

The next division of the labouring classes is that in which *the employments are carried on in an atmosphere confined and impure.* The author first speaks of the general influence of the air of manufacturing towns.

"The excess of carbonic acid gas," he observes, "is said to be very trifling; but our skins and linen prove an abundant admixture of charcoal itself. Ammoniacal and other vapours from manufactures, sewers and places of refuse add to the general impurity. This state of atmosphere affects in a greater or less degree all the inhabitants. The complexion is pallid; and the tongue shows that digestion is disordered and imperfect. I should think that not ten per cent of the inhabitants of towns like Leeds enjoy full health. Were we to ask, indeed, those we see around us, the major part would say they are quite well. But a close examination would prove that there are few individuals who have not either disease of some organ, or an evident disposition to disease. The lungs, however, suffer much less from the air of towns than we should expect. Bronchial

affections, indeed, are common; but other acute diseases of the chest, as pleurisy and inflammation of the lungs, are, I think, neither so frequent nor so severe as in the agricultural districts. Cases of consumption also are not comparatively numerous; nor in their progress so rapid in smoky towns as in the purer air of the country and the mountains. I speak of the general atmosphere of towns; for we shall hereafter see that the atmosphere of certain manufactories excites consumption to a very lamentable extent.

"Though all the inhabitants of large towns suffer in a greater or less degree from the impurity of the atmosphere, yet it is obvious that those who are most crowded together will be chiefly affected, particularly if ventilation be imperfect. A serious addition to the evils of a confined atmosphere is the defect of muscular exercise. Certain classes of muscles are for twelve or fourteen hours a day scarcely moved, and postures maintained injurious to the proper actions of the internal organs."

We shall state cursorily a few of the facts which Mr Thackrah has collected in relation to the operatives which he places in this division. *Tailors*, though not very liable to acute diseases, are exceedingly subject to obstinate disorders of the stomach and bowels, and are frequently attacked with pulmonary consumption. Few live to old age. Of twenty-two workmen employed in Leeds not one was sixty years old, two had passed fifty, and of the remainder only two had reached forty. The position of tailors when working is peculiarly injurious by restraining the free movement and natural action of the thoracic and abdominal viscera. This position is said to be requisite in order that the cloth may be brought sufficiently near the eye. The author proposes that a hole be made in the board on which the workman usually sits of a size equal to the circumference of his body, and that his seat be placed beneath it.

Among *weavers* fever is rather frequent, but other acute diseases are rare. The men, however, seldom enjoy health, being subject to dyspepsia, as well as to asthma and other affections of the chest. Yet, according to Mr Thackrah, "there are more old men in the occupation of weaving than in most others." This fact is in accordance with an observation which has been frequently made, that life is not necessarily shortened by causes which prevent robust and vigorous health. If the powers of the constitution resist the primary morbid actions for a certain period, so as to prevent great organic derangement, the system accustoms itself to its altered condition, which becomes, in fact, a new nature; and life goes on to its full period, though with a less amount of comfort, or at least of enjoy-

ment. The morbid cause, under these circumstances, becomes an agent essential to the new health, if we may so express ourselves, of the individual; and disease frequently results from its sudden withdrawal. We have been told that old persons long accustomed to the air of miasmatic countries speedily droop and die if conveyed into what is to others a healthier atmosphere; and few physicians would deny to an aged man affected with gout the continued use of wine, to which he had been all his life accustomed, even though it may have been the cause of the complaint under which he labours.

Milliners and dressmakers, *shoemakers*, *watchmakers*, and numerous other sedentary classes suffer in like manner with those already mentioned. The occupations of *curriers* and *cabinetmakers* are stated to be conducive to health, and a considerable proportion of those engaged in dressing leather live to old age. *Smiths* were not found to labour under diseases which could be attributed to their occupation, but, in consequence of intemperate habits, seldom enjoy long life. The author "could hear of but one old smith in the town of Leeds."

The third class of employments includes *those which produce dust, odour, or gaseous exhalations*. These are not all apparently noxious, and some are even thought to be wholesome. The author, somewhat theoretically, considers "that any addition to the natural atmosphere must be absolutely noxious in a greater or less degree;" and health would immediately suffer were not the injurious impression counteracted "by that conservative power of the animal constitution which accommodates functions to circumstances and situations." But though obvious injury is often prevented by this vital power, the author conceives that it is always at the expense of the power itself. He believes that the human system is gifted with a certain amount of vitality, which would naturally carry us to old age, that this principle is expended to a greater or less degree in maintaining health against noxious impressions, and that in proportion to this expenditure will be the diminution of the natural period of life. His opinion, however, is entirely fanciful, and wants the support of both argument and fact. So long as the system remains in a healthy state, we have no evidence of any expenditure of vitality; and it is well known that the body may become habituated to the causes of disease, and old age attained under circumstances in which, according to Mr Thackrah, the vital power should be rapidly exhausted from the constant necessity for its exertion. In stating

the fact, that certain effluvia are beneficial to health, he acknowledges an apparent contradiction to the opinion previously advanced, but attempts to prove a real accordance between the two statements by observing that these effluvia act beneficially by a remedial influence. "To man," he states, "in a perfectly healthy condition, no substance arising from manufacture can be useful; but men living in a large town, and with the habits of civil life, are generally unhealthy; and hence certain vapours or other substances may be decidedly beneficial in exciting their languid powers, or correcting the disposition to disease." It is undoubtedly true, that nothing can improve perfect health: but we can readily conceive, that impressions not in themselves in any way injurious may be produced by certain agents on a healthy system, which may serve to protect that system against the influence of morbid causes.

Among the occupations in which the exhalations are apparently beneficial, may be mentioned those of the *glue* and *size boilers, buckram manufacturers, tallow chandlers, and tanners.* Notwithstanding the highly offensive odours to which persons engaged in these employments are exposed, they are in general remarkably healthy. Of seven men employed in one buckram manufactory, one is 51, another 58, a third 68, and a fourth 76; and all have been engaged in the business from early youth. Tanners are exposed to the effluvia from putrifying skins and vapour loaded with lime, and with the volatile principles of tan. They are unusually robust, with a florid countenance; and disease is almost unknown among them. They are said to be peculiarly exempt from consumption. "We have carefully inquired," says the author, "at several tanyards, and could not hear of a single example of this formidable disease."

But though the effluvia in manufactures are sometimes innoxious, and in a few instances even beneficial, they are generally more or less injurious, and are often capable of producing fatal effects. In relation to *millers*, who are constantly inhaling the fine particles of flour, the author states that they are generally pale and sickly, with defective appetite, impaired digestion, and often have more or less pectoral disorder. Though he found several who had borne the employ from boyhood to the age of fifty or sixty, the individuals were by no means robust; and he could not find an instance of an aged or healthy miller. *Coffee roasters* "complain of oppression at the chest, difficulty of breathing, and cough, of headach and in-

digestion." Though the mere odour of tobacco is not injurious, *snuff makers*, who inhale the powdered narcotic mixed with muriate of ammonia and other substances, are affected with disorders of the head, bronchia, and stomach. Of all the occupations attended with much dust, the *manufacture of flax* appears to be most injurious, especially in the departments of carding and heckling. The persons employed "are subject to indigestion, morning vomiting, chronic inflammation of the bronchial membrane, inflammation of the lungs, and pulmonary consumption." Six individuals taken at random from those who had been employed for a long time, were found, upon examination with the stethoscope, to have the lungs or air-tube considerably diseased. A large proportion of men employed in heckling flax die young. Very few can bear it for 30 years, and the author could not find a single individual who "had been 40 years either in this or any of the dusty rooms." At one of the largest flax mills in the neighbourhood of Leeds, out of 1079 persons employed, only 9 had obtained the age of 50, and besides these only 22 were 40 years old. Young persons are observed to bear the occupation better than those of full age. It is a common practice to employ young children in the most injurious branch of the business, and to dismiss them from the mill, or transfer them to other departments, at the early age of 13 or 14. But there can be no doubt that unfavourable impressions are produced on the health, even at this early period, which if not obvious at first, display themselves in after life. What chance have children of attaining a healthy old age, when treated as represented in the following picture?

"No man of humanity can reflect without distress on the state of thousands of children, many from six to seven years of age, roused from their beds at an early hour, hurried to the mills, and kept there with an interval of only forty minutes, till a late hour at night; kept moreover in an atmosphere impure, not only as the air of a town, not only as defective in ventilation, but as loaded also with noxious dust. Health! cleanliness! mental improvement! How are they regarded? Recreation is out of the question. There is scarcely time for meals. The very period of sleep, so necessary for the young, is too often abridged. Nay, children are sometimes worked even in the night."

Cabinet makers and *turners of wood* suffer from the dust only when there is something peculiar in the property of the wood. The dust of African cam, rosewood, and Spanish mahogany, are particularly mentioned as injurious. Sneezing, headach, sickness, and

sometimes vomiting, are produced by the first; the others "occasion indigestion, and sometimes diarrhœa." The spicula thrown off by stones and metals are often highly noxious. The effects of the former are seen in *miners* who work in sand stone, when there is not moisture enough to lay the dust: when the ore is in limestone the workmen suffer little inconvenience, because the fissures existing in this rock always admit water into the mine. *Grinders* suffer much from a similar cause. "Dr Knight states that the fork-grinders, who use a *dry* grindstone, die at the ages of 28 or 32, while the table-knife grinders, who work on *wet* stones, survive to between 40 and 50." The prevalent maladies resulting from this cause are affections of the lungs and bowels. Much depends on the size and figure of the particles which are inhaled. While the dust from the roads, and that which rises from old rusty iron produce little injury, the masons' chippings, and the particles detached from iron by the file, are highly noxious. In the latter cases, the angular or pointed figure of the spicula, is probably the chief cause of injury. "*Filers* are almost all unhealthy men, and remarkably short-lived." Only one instance could be found in the neighbourhood of Leeds in which an individual had followed this business for 20 years; and at two of the principal machine manufactories of that city, there are only two filers at the age of 48, neither of whom pursued the labour uninterruptedly from boyhood. The working of wrought iron was found to be much less injurious than that of cast-iron. The *turners, filers, and dressers of brass*, do not seem to be more unhealthy than the generality of the townsmen.

Brass founders, braziers, and coppersmiths, suffer considerably from the inhalation of metallic vapours. "The men suffer from difficulty of breathing, cough, pain at the stomach, and sometimes morning vomiting." Mr Thackrah did not find one brass founder more than 40 years of age, though informed that there were two in the neighbourhood of the ages of 60 and 70, who had been engaged in the business from early life. The effects of the fumes of lead are too well known to require particular notice. The vapours and gases evolved in chemical laboratories are stated to exercise an injurious influence on health. "Few old men are found in laboratories."

The fourth class of occupations are those which *injure or annoy by acting on the skin*. *Potters* are affected with obstinate constipation and frequent attacks of colic, resulting from the use of

lead in glazing; "and if kept in this department they at length become paralytic." The effect is attributed to the immersion of their hands in liquid containing the preparation of lead; and it is said that much good has resulted from enforcing among the workmen a regulation, that they should thoroughly clean their hands before going to meals.

The frequent handling of sugar is said to produce among *grocers* a cutaneous eruption of the character of impetigo, or eczema; and *bricklayers* experience a similar effect from lime. *Bakers* are affected with a scaly eruption, a variety of psoriasis, arising from the irritation of the flour. The cancer scroti of *chimney sweepers* is well known.

The action of oil upon the skin is thought by the author to be beneficial; and to this cause in part he attributes the greater healthfulness of the woollen manufacture. "The men, the young women and children in this employ, are more robust than other artizans; and when the dye and dirt are removed from the skin, have really the complexion of health. Individuals, too, who have been injured by the dust of other kinds of manufacture, and hence have been obliged to leave such employ, became hale and vigorous on their removal to the woollen." But this effect is chiefly ascribable to the circumstance that the oil of the wool prevents the formation of dust.

The fifth class of the operatives are those exposed to *wet* and *steam*,—"water about the temperature of the atmosphere, and water vaporized by heat." The author is disposed to ascribe much less agency in the production of disease to moisture, with changes of temperature, than is generally admitted both by medical men and those not belonging to the profession.

"A reference," he observes, "to the situation and employment of several classes of society decidedly shows that wet and cold, without other agencies, do not produce the disorders ascribed to them. Look at the brickmaker, who is subject neither to rheumatism nor catarrh, though his bare legs are immersed all day in a puddle; at the dyer, on a wet floor, and subject to great atmospheric changes both of humidity and temperature almost every moment; at the bricklayer, who is exposed to every vicissitude of weather, and is generally careless of protection; at the paper-maker, one hour perspiring at the strong labour of the press, in an atmosphere of warm vapour, the next standing in the same dress, in a room open on both sides to the wind, and merely putting up sheets of paper to dry; at the wool-scourer, the miller of cloth, and men in similar employments. Individuals, indeed, in these departments sometimes complain of pains, which they

call rheumatic. But such complaints we find in all occupations and classes of men. The nature of these pains is obscure. They appear to be affections of the muscles. True rheumatic inflammation of joints is not frequent in any of the employments I have mentioned. Though we find instances, these are not more numerous than among corn-millers, and less than among croppers. Of other acute diseases ascribed to cold, as inflammation of the lungs, pleurisy, &c. the men generally appear quite ignorant. I am far, however, from maintaining that vapour, wet and cold, never produce disorder. In certain circumstances, and when long continued, they certainly do. The reaction that ensues advances to fever and inflammation. But cases of this kind are rare. I contend that in the daily instances of common life, cold is not the great cause of disease; and even in those which are considered as exhibiting indisputable evidence of its effects, a morbid predisposition has generally been formed by the person's habit of life, as influencing the state of the circulation and secretions."

The author concludes his remarks on this subject by the following propositions; "1. That 'wet and cold,' as they occur in ordinary life, are rarely adequate to the production of disease; and 2. That in the few cases in which they have such agency, they are only the *exciting* causes of disease."

We do not think Mr Thackrah very happy either in the opinion which he has adopted, or the arguments he has adduced in support of it. Much more than he has advanced will be requisite to overthrow a conviction so deeply rooted in the experience of mankind in all ages, that vicissitudes of heat and cold, moisture and dryness, are among the most common causes of disease. That persons constantly exposed to these vicissitudes are less liable to their injurious influence than others, is a fact in accordance with a well known law of the system, and affords no support whatever to the opinion of the author. The constitution becomes habituated to this as it does to other noxious agencies; and an individual who lives through the first periods of exposure, will after a while cease to feel inconvenience. It is a fallacy to suppose that persons under ordinary circumstances take cold in consequence of any morbid predisposition: they feel the effects of atmospheric change, because they have not hardened themselves against it; and the liability to be affected is entirely compatible with a state of perfect health. The opinion of Mr Thackrah, if generally adopted, would, we conceive, be productive of much evil, by causing a neglect of those ordinary precautions, which the existing state of society renders necessary, in order to avoid danger from vicissitudes of heat and cold.

The effect of steam, without frequent and considerable changes of temperature, is to produce disease in the alimentary canal. The *brushers of cloths by steam* who are immersed all day in dense vapour, often suffer distress in breathing; but are more permanently affected with disorder of the bowels, generally attended with impaired appetite, and not unfrequently with vomiting. They have a very sickly appearance, but do not suffer more than others from rheumatism, catarrh, or pneumonia.

The last class of operatives which the author examines, consists of men who are exposed to *a high temperature, or to great variations of temperature.* Among these are "*bakers, cooks, persons in the dryhouses of cloth, glossers, stuff-pressers, cotton and silk spinners, glass-workers*, and *iron-founders.* They are not apt to be affected with acute disease, but are often pale and thin, with feeble appetite and disordered digestion, and do not generally attain old age. It too often happens, that habits of intemperance add to the injurious influence of heat. The *glass-workers* appear to suffer less than most of the others. When temperate, they are usually in good health, and attain considerable age. Cases are stated of individuals remaining at the employ till the age of 70 and 80."

Having completed a view of the several classes embraced by the title of *operatives*, the author proceeds to fill up his plan, by a rapid sketch of the three remaining orders into which he distributes the inhabitants of the city. But as this part of the work contains few facts which are not familiar to most professional men, we shall pass it over without particular notice, observing, however, that individuals belonging to the different trades and professions, will find in it hints relative to the best modes of preserving their health, which will amply repay them for the time and trouble of an attentive perusal.

Nor shall we be able to follow the author in his recapitulatory classification of the agents of disease. The following quotation presents the general result of the influence of these agents.

"In examining factories we have frequently asked, 'Where are the old men?' In fact our principal employments contain but a small proportion of the aged,—no such proportion as we find in the pursuit of husbandry. In the employments, moreover, which do present a considerable number of old workmen,—weaving, for instance,—these individuals are by no means robust. They are vastly inferior in strength or appearance to old peasants. Though life may be protracted, it is not full life. On the whole, our inqui-

ries show that some artizans are cut off by severe maladies; but that the majority have their constitutions so impaired by premature labour, by subsequent excess of labour, or by intemperance, that they fall under comparatively slight attacks of disease, attacks which the constitution of countrymen would resist. And of those who survive to advanced life, the majority are so enfeebled as to be unfit for the labour to which they have been accustomed, and are obliged in consequence to seek a scanty livelihood in easier employments. Finally, not a few who have been improvident, are found in the work-house, prematurely aged."

It must be recollected that these and all other observations of the author have relation to a state of things which by no means exists to its full extent in this country; and are chiefly valuable as they may contribute towards preserving us from the evils which it is partly the object of the work before us to represent. In relation to the comparative healthfulness of cities and the country in the United States, we are convinced that the former will not, as a general rule, yield to the latter, unless it may be in the cases of infants during the summer season. Our streets are in general sufficiently wide to admit of free ventilation, and are usually kept clean. The poorest classes have an abundance of wholesome fare, and instead of being crowded together in great numbers in the same house, are distributed for the most part in separate habitations, accommodated to the circumstances of families. Manufactures, though carried on to considerable extent, are distributed in small establishments, in which the workmen are not inconveniently crowded; and the largest factories are usually in the country, where they have been placed for the convenience of water power. Exceptions may of course be found; but the above statement is generally correct; and our ardent wish is, that we may always be able to congratulate our country on its exemption from evils, of which we receive such melancholy accounts from the older and more populous countries beyond the Atlantic.

ART. XIV.—MANUAL OF MATERIA MEDICA AND PHARMACY.

A Manual of Materia Medica and Pharmacy, comprising a concise description of the articles used in Medicine; with observations on the proper mode of combining and administering them; also, the Formulæ for the Officinal Preparations of the London, Edinburgh, Dublin, Parisian, American, and most of the continental Pharmacopœiæ: together with a table of the principal medicinal plants. From the French of H. M. EDWARDS, M.D., *and* P. VAVASSEUR, M.D. *Corrected and adapted to British practice by* JOHN DAVIES, M.R.C.S., *Surgeon of the Herts Militia, late editor of the London Medical and Surgical Journal, &c. London.* 1831. *pp.* 490. 8*vo.*

Had we not been taught the reverse by experience, we should hardly have supposed, that in the nineteenth century, when, from the prevailing thirst after professional knowledge, and the general diffusion of an acquaintance with the principal living languages, the productions of the press make, in a few months, the round of the civilized world, individuals should have the hardihood (to use no harsher expression) to affix their names to the title page of a work as translators or commentators, or to claim as a production of their pens, contributions for which they are indebted to others, and should after all appear insensible to the danger of detection.

Wonderful and unexpected as this practice of plagiarism may appear, it has, however been pursued on innumerable occasions in our own days; and we believe that without disparagement to the merits of our English brethren—merits which we are ever willing to admit—the charge of having been guilty of such unhandsome depredations on the productions of others can be oftener brought home on the professional writers, or rather professional scribblers, of their country, than on those of any other.

We have not as much space and time as would be required to enforce this assertion by numerous examples, and must, therefore, content ourselves with alluding to a few facts which occur to our minds while writing these lines. To a notice of the thefts of an individual who at present edits an *olla podrada* called the London Medical and Surgical Journal, and who usually fills a portion of his numbers with long extracts (which he tastefully denominates *entremets*) from our Journal, the whole without acknowledgment, we need not recur in

this place, as they have been exposed in a former number. But other cases in point, which are, perhaps, not so well known to our readers, may be mentioned. In one of the numbers of a medical journal, edited some years ago, in London, by Mr Anderson, we found three or four articles taken from one single number of our publication, the whole *verbatim et literatim*, and without a word of acknowledgment. Among these articles we may particularize a review of Derheim on Leeches, and a biographical notice of the late professor Béclard. We recollect, also, comparing, some years ago, a review of Tiedemann on the Brain, contained in a number of the London Medical and Physical Journal, with another of the same work which appeared some years before in the *Journal Universel des Sciences Médicales*. The identity of the two was fully established, though the plagiarist had made some trifling alterations in order to give to his article an English dress. Nor have the more respectable portion of English professional writers escaped the contagion of plagiarism. Mr Grainger, the author of a late work on general anatomy, has made rather more free with Béclard than he acknowledges—copying whole paragraphs from the French writer, and deriving a great portion of the substance of the rest of his work from the same source.

It is but an act of justice, however, to British physicians to state, that while writers among them are, oftener than others, guilty of the peccadillos to which we refer, we do not mean to affirm that they alone are chargeable with them, and that continental or even American physicians themselves have not acted on the principle advocated by the French satirist, that *tout ce qui est bon m'appartient*. We could refer to more than one strange *coincidence* of the kind in French and, we blush to own it, in American medical literary productions. But by so doing we should only swell this article beyond its proper dimensions, and draw down upon ourselves the ill will of many an author of dispensatories, treatises, pamphlets, and introductory lectures.

Flagrant as the guilt of the writers to whom we *have* referred, as well as that of those to whom we *could* refer, may appear on close inspection, they, in some measure, sink into insignificance when compared with an example of literary piracy to which we now beg leave to call the attention of our readers.

It may, perhaps, be remembered, that in the ninth volume of this Journal we gave a critical notice of an American translation of MM.

Edwards and Vavasseur's Manual of Materia Medica, with numerous valuable additions by our estimable townsmen, Dr Togno and Mr Durand. Now, this translation and its additions appear to have found their way into the hands of Mr John Davies, M.R.C.S., Surgeon of the Herts Militia, &c., and to have been considered as fit prey by that gentleman. Such, at least, we are led to infer from a comparison of the American publication with that whose title we have prefixed to this article.

The trifling charges which we are induced, after this comparison, to make against Mr Davies, are the following:

1. That Mr Davies is not the author of the translation in question.

2. That, in omitting the names of the American editors, he unjustifiably endeavours to represent as his own, the additions they have made to the work.

3. That he pretends, without sufficient foundation, to have corrected the work of Edwards and Vavasseur.

4. That so far from incorporating "*new matter*" of any value, in addition to that which the American editors had introduced, Mr D. has neglected to add to his edition a notice of many interesting substances which have been discovered since the publication of the work in this country, and which those gentlemen would not have failed to introduce, had they been called upon to prepare a second edition.

Should the remarks of American journalists on this act of dishonest plagiarism never circulate in England; should he not be detected and exposed by some of his own countrymen, we shall be disposed to consider Mr D. as a very lucky man, in finding works already translated, researches already made, to which he can affix his name, and which will enable him to receive credit for his industry. We are fully persuaded that Mr Davies calculated on the disposition of the few of his countrymen who will be able to detect his imposition, to keep his secret for the honour of their country; and supposed that the ignorant people of America would never find him out, or have the hardihood to affront him or his friends by the discovery. We hope, however, that he will be as disappointed in the former supposition, as we know he will be in the latter. Some honest reviewer will, we have little doubt, be found in the three kingdoms, who will chastise him for his impudence; and we beg him, and those of his genus, to rest assured, that the physicians of this country read more, and exercise their minds more, than some give them credit for; and that neither we ourselves nor our contemporaries here, will ever shrink

from the task of defending the rights of our countrymen, against the depredations of all the editors of the London Medical and Surgical Journal—*past, present,* and future.

We have said that it was evident Mr D. wished to pass the translation before us as his own, and to lay claims to the additions to the original work which it contains. To this conclusion we believe every one will arrive, from a perusal of the title page and preface, in which the names of Dr Togno and Mr Durand are not contained, and in which he states that he has added "some new matter," and adapted it to British practice. It would be a poor argument against this charge to say, that as Mr D. does not state in positive terms that he *is* the translator, therefore he did not wish to be considered in that light. Had this not been his intention, we see no reason for omitting the names of the real translators, who might not be known to the English reader, unless they were introduced to his acquaintance by Mr Davies.

It would be a useless employment of our time to undertake to prove by quotations and comparisons, that Mr D. has not a shadow of claim to the translation before us. It will be sufficient to affirm the fact, and refer those of our readers who feel interested in the subject to the English and American edition. Indeed, we not only think we could prove the fact to the satisfaction of every one, but believe that it would not be difficult to render it very probable, that Mr D. never saw the original, or at least did not compare its text with that of the translation he was so unceremoniously appropriating to himself.

It is true that in some instances he has given a construction to a few phrases different from that adopted by the American translators; and has corrected many of the imperfections of style into which they had fallen; but this could be done by a person unacquainted with the French language; and, on the whole, the phraseology belongs to these gentlemen. Even in this respect Mr D. has not done, what we know the American editors proposed to do in their next edition, viz. correct a great many minor verbal and typographical errors; errors which ought not to have been retained in Mr D.'s edition, had he taken the trouble to read carefully the whole American edition, and compare it with the original. The most amusing circumstance in this business, however, is, that Mr D. in his translation—admitting that he has really translated the work—has, in many instances, hit on the very mistranslations which had unhappily crept into the American edition; thus fully confirming

our assertions, that he is not the translator, and has probably never read the original. A few of these may be cited. They were pointed out in the review in this Journal already referred to. For instance, at page 10, we find "salts may be neutral, although they contain a small excess of acid or base," instead of, salts may be either neutral or may contain a small excess of acid or base. At page 34, "carbonization is an operation similar to calcination, but carried to a *greater* extent," instead of a *less* extent; page 53, "Meloe vesicatoria," for Meloe vesicatorius. The word Meloe has been made "Melo" in the English edition. Page 321, "Fresh taste," for cooling taste, &c.

Mr Davies says in his preface that "he has been induced to undertake the task of preparing the present edition after giving a full consideration to the merits of the work." It is well that Mr D. should at least thus acknowledge the merit of the work, and think it superior to every British production of the kind; but this was no reason for purloining the labours of the American translators. "J'apelle un chat un chat, et Rollet un fripon." He however admits in a note of two lines, page 27, that there exists such a thing as a translation of this work made in America, and transcribes with acknowledgment a table of weights and measures substituted by the American editors for the one contained in the original, as if the latter had done nothing else than alter an insignificant table. Even in this note he does not allow that he has adopted in his edition their translation; but, on the contrary, leaves it to be supposed that he also has made a translation of the original work different from the American.

But Mr Davies is not satisfied with giving his *English readers* to understand that the translation he offers them is his own. His rapacity extends still farther, and he does not blush to lay a *positive claim* to the additions made to the original work. Thus in his preface, page 8, he tells us, with a *sang froid* passing all bounds, that "he has made numerous corrections in the present edition, and he has also *added some new matter to the work.*" But it may safely be asked of Mr D. where this *new matter* is to be found, unless perhaps he alludes to *his name* and numerous titles, one page of dedication, one of preface, besides four insignificant notes of from ten to twelve lines, six paragraphs (containing the results of the analysis of British mineral waters) of five lines each; and two half lines incorporated in the list of wines prepared by the American editors: the whole amounting to fifty-four lines!!

If this constitutes the new matter which Mr D. has announced in his preface, we must be allowed to remark that the surgeon of the Herts militia can make a great ado about a small matter. We are perfectly aware that in this edition there is some new matter, and a great deal of matter too, not to be found in the French original, amounting to upwards of sixty new articles, notes, &c., some of which are of considerable size, and of great value; but we beg leave once more to apprize our readers that this new matter belongs, not to Mr D. but to the American editors. And yet, with his usual liberality, Mr D. takes great care not to acknowledge his obligations to those gentlemen; or, as some more charitable critic might perhaps suppose, he has forgotten to refer the additions to their true source.

Moreover, the whole of the articles on the subject of the doses and mode of administration, which constitute one half, and by far the most elaborate and important part of the work, were entirely remodelled and compiled by the American editors. These articles have been unceremoniously copied by the conscientious *ex*-editor of the London Medical and Surgical Journal.

But either from some qualms of conscience, or from the fear of being accused of having too voracious an appetite in his pilfering, or, finally, perhaps, in order to show off his moderation in not appropriating to himself every thing within his grasp, Mr D. has omitted in his edition many important articles, and pruned others, which, had he retained entire, would, we are certain, have enhanced the value of his publication. Having, however, decided on expunging some of the additional matter contributed by the American editors, and curtailing other parts of it, we cannot help expressing our regret, that he should not have displayed more taste and judgment in the manner in which he has performed the task of abridgment. For our own part, acting on the principle, that a man who runs the hazard of his neck or of his reputation, for stealing, may as well play the thief on a large scale, because he gains nothing by moderation, we believe that, if we had been in Mr D.'s place, and had felt tempted to borrow without acknowledgment from other writers, who, in consequence of their great distance from England are presumed not to be known in that country, we would unhesitatingly have assumed the whole, and *boldly* taken our chance of discovery. Had the theft remained unnoticed, he would have gained more credit for his supposed industry and learning, while, had he been discovered, he would have been (as he is) thought a plagiarist—a few pages

more or less making very little difference as to the extent of his crime.

But we must here terminate our remarks on this unpleasant subject, with the expression of the hope that we have not fulfilled with undue severity the task which a sense of justice towards our fellow citizens imposed on us. In defending the claims of Dr Togno and Mr Durand, we have been actuated not only by a desire to award to them the credit to which they are entitled, but to uphold the character of the profession, which, we conceive, is wounded by any dishonourable act on the part of its members. This must be a sufficient apology for dwelling so long on this subject.

Art. XV.—ON THE UNITY OF THE HUMAN RACE.

Thoughts on the Original Unity of the Human Race. By Charles Caldwell, M.D. *New York, E. Bliss,* 1830: *pp.* 178, 12*mo.*

We owe the ingenious author of the work before us an apology for not having noticed it at an earlier period. His knowledge, however, of the various causes, other than neglect, which may prevent articles from being passed in review in due season, will, we are sure, excuse us in his eyes on the present occasion.

This is not, if we are rightly informed, the first time in which Dr Caldwell has entered the lists of controversy on the important subject of the Unity of the Human Race. Be this as it may, his "Thoughts" are evidently those of a practised debater; of one who has studied his subject attentively, and let us add, with perfect sincerity, whatever may have been the justness of criticisms of other productions of the same pen, the present essay is written in a clear nervous style, without any adventitious aids of ornament or tinsel metaphor.

The subject involved in the discussion between Dr Pritchard and Dr Caldwell, is one of great moment; not as a mere matter of philosophical speculation, not as testing the sincerity of a man's belief in the literal meaning of the Mosaic account of the creation, but as bearing directly upon the question of the extent to which the same principles of education—intellectual, moral, and

political, are applicable to the different people scattered over the surface of the earth. History will not have spread its ample pages before us in vain, if from them we can derive aid in unravelling some of the mysteries of this subject. But in this department of knowledge there may be seeming contradictions; special history or direct narrative may seem to be opposed by general history, or the record of a long and complicated series of events. Now, as neither truth, nor the records of truth, can be in contradiction with known and appreciable phenomena, we are constrained, when satisfied of our knowledge of the latter, to deny the correctness of any account which necessarily supposes a state of things incompatible with these phenomena, and out of which they could not have arisen. Let us be understood. We speak now of natural events assumed to follow prior events, without supernatural interposition or the intervention of a miracle. The first postulatum, however, in the present inquiry, which ever side we take in it, is the miraculous creation of man and woman, types and parents of succeeding generations, from that event down to the present day. After this, all that follows in the varieties of the human race is supposed, indeed expressly admitted, to be explicable by the common agencies at work in the universe; the chief of which are climate, which implies of course locality and the absence or advancement of civilization, including moral and religious culture. The Mosaic account of the origin of the people that have inhabited and now inhabit this earth is, that a single man first, and very soon afterwards a single woman, were created by special providence. From their union have sprung, we are allowed to infer, all the inhabitants of the earth. Sacred history is silent, and its silence has been construed into an implied denial of there having been any other like beginning of the human race. But sacred history is likewise silent, except in one instance, and that is not clearly expressed, as to the causes of the great differences in the physical appearances and mental display of the various families of mankind—differences which we have strong if not conclusive evidence to show, existed in a marked manner at the time of Moses himself. We are no where, in the Mosaic writings, told of such differences among those whom we should regard as the sons and daughters of Adam and Eve in a direct line, being the result of miraculous agency; no causation of this kind has been claimed since, nor is it claimed at the present time, as accounting for the observed differences among the various people now living. We are left, therefore, free by this continued silence to inquire into the causes of the varieties of man-

kind as they are derivable from, or depend on, natural and ordinary phenomena. By one set of philosophers and physiologists these phenomena are deemed adequate to account for all the observed peculiarities among the inhabitants of the earth, compatibly with their common origin from one couple, as recorded by Moses. Another party deny the validity of the evidence adduced, and contend that the varieties of man are marked by too many distinctive characters, which are also of too permanent a nature to render it possible that they could all have had the same origin, that is, the same parentage. In justice to both parties in this controversy, it ought to be distinctly understood, that they who disbelieve in the unity of mankind, as being of one species, merely modified by climate and other obvious physical as well as moral causes, do not rest their proofs either on the Mosaic account or on any miraculous change wrought in varieties of the species. Their appeal is to the reason and common sense of their readers and auditors, by arguments deduced from known and appreciable phenomena, and especially those of a physiological nature. Nor, on the other hand, is it pretended, as far as we know, by the other party, who are on the negative side, to insinuate doubts of the first miraculous creation of man, and even of the authenticity of the Mosaic history. If called upon to express their opinions on this point, they would, we presume, allege that, as no part of the history of creation can be falsified by the laws which govern created beings, the account given by Moses is not *inaccurate* but only *incomplete*, and applicable to one, and that indeed the chief variety, or, as they would say, species of man. The same omnipotent Being was surely competent, however, to create more than one couple of the human species, and the admission that he did so cannot aught derogate from our notions of his wisdom and benevolence, while it has the immense advantage of enabling us to see, that the general laws which he first established, are entirely fitted to include all the emergencies and phenomena which have occurred, and shall occur, without the continued or frequent intervention of his special providence.

We believe that we have fairly displayed the ground which the two parties occupy in this controversy; and that whilst we deny the right of one of them to call the other irreligious and profane, so should we be averse to hear the other stigmatized as bigots, and as attempting to sustain a cause by adducing dogmas when reason fails. That Dr Caldwell, in the opinions which he holds, has no

intention to undervalue religion, we clearly gather from the following paragraph in his address "To the Public," prefixed to the "Thoughts."

The language is creditable to the author, and none the less esteemed by us, because it is strictly phrenological, and every one would eagerly desire that it should be, as we ourselves believe it to be, true.

"A sentiment of religion enters, as an essential ingredient, into the constitution of man. It is as much a part of his moral nature, as a leg or an arm is of his organic. Deprive him of it, and he would be rendered monstrous. Like the loss of any other indispensable portion of himself the mutilation would unfit him to play his part in the drama of life. The sentiment of religion is adapted to the relation which man bears to his God, if it is not the immediate growth of it. It constitutes, therefore, an essential element of the law of his being. Without it, human nature would be an anomaly in creation, and an outcast from the scheme of benevolence and wisdom, which embraces every thing else."

In reply to the objection which *a priori* may be urged against the author for believing in a plurality of species, of different degrees of mental and bodily vigour, and, of consequence, in the superiority of one over the others, that it justifies tyranny of the strong over the weak, he thus expresses himself:

"It is not true, then, that the theory contended for favours injustice, oppression, and wrong, inflicted by the higher races of men on the lower. It gives no countenance, as it has been accused of doing, to cruelty or tyranny practised towards the Africans, or the aborigines of our country. Each race is entitled alike to all the rights it is fitted to enjoy. But each race is neither qualified, nor can ever become so, to enjoy and turn to proper account precisely the same rights, especially in the same degree, and has not therefore the same claim to all of them. The Caucasians are not justified in either enslaving the Africans or destroying the Indians, merely because their superiority in intellect and war enables them to do so. Such practices are an abuse of power; and where is the privilege that is not liable to abuse? Even the inferior animals, for whose equality to man no one contends, have their rights, of which nothing but injustice and tyranny can deprive them."

The Thoughts on the Original Unity of the Human Race, were originally committed to paper, with the intention of making them an article for one of the Reviews of our country, but it was found to be too long for this purpose. It is still, however, even in its present shape, a critical review of the work of Dr Pritchard, entitled

"Researches into the Physical History of Man." The object of this latter work, and the interest excited by the question in general, are thus described by Dr Caldwell.

"It is to establish, on philosophical ground, the doctrine of the original unity of man; in simple language, to prove the descent of the whole human race from a single pair. All minor considerations being disregarded, the accomplishment of this single purpose constitutes exclusively the design of the work.

"This subject, as a matter of science, having long excited a lively interest in the minds of naturalists, and being considered by many theologians as essentially connected with the truth of revelation, has been not only referred to by the ancients, but repeatedly discussed, by some of the ablest writers of modern times. Hence the general attention it has attracted. Independently of its own intrinsic importance, and the high relations which opinion attaches to it, Buffon has immortalized it by the splendour of his eloquence. The interest of the American public in it has been further strengthened, by an elaborate 'Essay on the causes of the variety of complexion and figure of the human species,' by the Rev. Dr Smith, late President of Princeton College."

A highly wrought eulogium then follows on the learning, ingenuity, labour and research, displayed in the work of Dr Pritchard, instanced in the knowledge of "geography and all its branches, but more especially its physical and topographical (ones), the history of man both natural and civil, general zoology, botany, anatomy, philology and classical literature."

After stating the spirit in which this subject ought to be approached and examined, the author takes occasion to qualify the eulogy pronounced a little before on the merits of Dr Pritchard's "Researches," as well as to express his views of the kind of authority possessed by the Scriptures.

"He (Dr P.) did not contemplate the theme of his inquiry with philosophical impartiality. He was swayed, by his wishes, to the perversion of his reason, and the prejudice of his judgment. His object does not appear to have been rigidly to *examine* the question, as to the original unity of man; but positively to *settle* it—*in his own way*. His resolution was fixed to dispose of the gordian knot by some means; to cut it, if he could not untie it. Hence, although he acquits himself, throughout his whole discussion, like a dexterous controvertist, he is evidently wedded to opinion—spell-bound and in chains. His intellect is not permitted to have a free scope. He never forgets his covenant with himself, that, right or wrong, the affirmative side of the question must triumph. He relies, therefore, on analogical evidence, as if it were positive, and instead of pursu-

ing the direct path of the inductive philosopher, enters too frequently the labyrinth of the sophist. He plays, with no little dexterity, the part of a firm and faithful advocate, not of a stern and upright judge. And, if we mistake not, this misapplication of his powers, to reconcile incongruous things, arises from the cause to which we have already adverted, an implicit and prejudiced belief of every sentiment extorted by construction from the Old and New Testament.

"We mean no disrespect toward the Scriptures in saying, that however invaluable they are, as a system of moral and religious instruction, they are no authority in physical science. Nor should they ever be referred to, as such, in discussions connected with that branch of knowledge. The original unity, or the multiplicity of the human race, therefore, is as fair a question in natural history, as it would have been had Moses never alluded it. It belongs as exclusively to that branch, and is as legitimate a topic of inquiry, as any point that relates to the genus Equus, or the genus Taurus. Nor does an examination of the one imply a doubt of the verity of written revelation, or a denial of its value in matters of religion, any more than that of the other. Professing our veneration, then, for all that is moral and theological in the Scriptures, we shall proceed to the consideration of the subject before us, without any regard to their authority, in the department of science to which it belongs."

Dr Pritchard is accused by the author of relying exclusively on analogy for the maintenance of his hypothesis. The first instance is in referring each species of vegetables which the earth contains to a single male and female, "planted in a spot where soil and climate and exposure and all other circumstances were most favourable to their growth and propagation. But he does not admit that all kinds of vegetables ever occupied the same tract of country. Those of Europe, Africa, and America, are not all descendants of an Asiatic stock. Each continent was furnished at the beginning with its own aboriginal plants."

The diffusion of the seeds of vegetables is explained by Dr Pritchard by the agency of winds, rivers and smaller land streams, oceanic currents, and the bowels of birds and quadrupeds; and for the conveyance of the seeds of domesticated vegetables he relies on commerce, and the migrations of the human race.

These views are objected to by the author of the "Thoughts," as mechanical and dwarfish, savouring exclusively of earth and man, not of heaven and its all-wise and omnipotent ruler. Opposed to them, he believes that the Almighty so ordered all things at the

creation, that in due time, and in the most suitable regions and places, the earth gave birth to its vegetable productions; not in pairs but in myriads.

"This it did spontaneously, in obedience to laws which still exist. We further believe, therefore, that were the whole vegetable kingdoms, stalks, seeds, and roots, entirely destroyed, it would produce them again. Nor have we formed these opinions hastily, or without reflection; and, if we are not mistaken, nature is rich in facts to confirm them. The following few, out of many that might be cited, tend to that effect.

"From almost any portion of uncultivated ground, in the United States, remove the forest timber, and the undergrowth that has covered it for ages, and, in a short time, a crop of different vegetables will spring up. Nor will they be the vegetables of the neighbourhood, but such as are found only in remote places. Shall we be told that the seeds or roots of the new plants had lain long buried and dormant in the ground, and vegetate now because hindrances are removed, and circumstances rendered favourable? We reply, that this is conjecture, and add, that it is exceedingly improbable. By no strictness of search can such seeds or roots be detected. The attempt has been made, and has uniformly failed. Not a germ of the strange growth has been discovered in the soil.

"Will others allege, that the seeds of the new vegetables have been carried by winds, and deposited in the place accidentally prepared for them? The seeds of the plants, to which we refer, are usually such as the winds cannot carry, because they are specifically heavier than the air. Winged seeds alone are transported by the wind. Will a third class contend, that the seeds are conveyed and deposited in the spot of cleared ground, by birds or quadrupeds? This is another conjecture, no birds nor quadrupeds being found in the act. Nor do so many of them frequent the place, as did before deprived of its timber, which afforded them a shelter from the weather, and concealment from their enemies. Some of the vegetables, moreover, are those, whose seeds no animals within our knowledge do carry and plant, in the manner alleged. It is the seeds chiefly of berry-bearing plants that are thus diffused. The fruit is eaten entire, by birds or other animals, the pulp digested, and the seeds voided. To treat the subject more circumstantially.

"In New Jersey, the Carolinas, and elsewhere, the following phenomena have been repeatedly observed. Cultivate, until you impoverish it, a tract of land, whose original native growth was oak and hickory. Cease to cultivate it, and it will produce, in a few years, a crop of pine. Suffer this to grow for fifteen or twenty years, until, by the falling and decomposition of leaves, branches, and bark, and the decaying of herbs and grass, the soil shall be again enriched. Fell and remove the pine, and oak and hickory

will be again produced. Further. In the same states, cut down a pine forest, that has occupied the ground for ages, and the succeeding growth will be oak and hickory. In New Jersey, several flourishing nurseries of young oaks, produced in this way, exist, at present, in the centre of extensive forests of pine. Nor, we repeat, can the severest scrutiny detect, in the soil, either pine seeds in the one case, or acorns or hickory-nuts in the other. Are we asked the cause of these changes of vegetable productions? The answer seems easy. In the places specified, pine is the native growth of a poor sandy soil; and oak and hickory, of the same sort, when somewhat enriched by the dissolution of vegetable matter. Impoverish the soil, therefore, where oak and hickory have grown, and you fit it for pine. Fertilize that which has produced pine, and you adapt it to the production of oak and hickory."

The following, to the same purport, is quoted from Judge Peters, in the "Memoirs of the Philadelphia Agricultural Society."

"Intelligent surveyors, who have been occupied in running out new lands in Pennsylvania, and other states, remark, in a variety of instances, a total change of timber, in many extensive districts of wilderness. They discover, by the fallen timber, that the present forest trees are entirely different from those of the former growth. Those prostrate are, in many instances, of the resinous tribe, where those of a totally different kind are growing, of enormous dimensions.

"In my own memory, a total change of timber has occurred, in a tract of my own, containing about 800 acres, in Northampton county. Previously to our revolution, I knew it to be covered with pitch pine. It was called the *pine tract*. This growth of timber having been blown down by a tornado, was consumed by fires of the woods. It is now entirely reclothed with oak, hickory, and other valuable and well grown and thriving timber; and scarcely a *pine* tree is to be seen. I can give within my own knowledge, several instances similar, but of less extent. One, of a fine grove of *white pines*, thrown up *spontaneously*, on *old fields*, where no timber of that species had originally grown; and far from any such timber. Another, of a large body of valuable *chestnut*, where a person, now living, has reaped wheat and other grain; and where oak and hickory had been the precedent growth; and no timber of the latter kind is now to be seen on the adjacent lands."

From the same source we are told that

"In the course of the last century, the white pine sprang up *spontaneously* in Duxborough, in the state of Massachusetts, without having been previously a native of the neighbourhood. Between twenty and thirty years ago, there was a man still living, who had a perfect recollection of the first pine that ever made its appearance in the township: whereas, at present, that plant constitutes an eighth part of the timber of the place.

"In 'Mackenzie's Voyages' in North America, we find the following interesting clause. 'It is a very curious and extraordinary circumstance, that land covered with *spruce pine* and *white birch*, when laid waste by fire, should subsequently produce nothing but *poplars*, where none of that species of tree was previously found.' To agriculturists, in new settlements, it is perfectly known, that from the spots on which they burn their brush-heaps and log-heaps, when they are clearing their ground, new plants spring up, entirely different from any others in the neighbourhood; different indeed from any others existing in the country, except in similar situations. It is further known that, in many parts of Pennsylvania, and others of the Atlantic states, if a tract of uncultivated land be cleared of its timber and undergrowth, and enclosed by a fence, it will be covered, in a year or two, with a spontaneous crop of white clover. In this way a good pasture of that plant may be formed, where not a leaf of it had previously appeared. In many parts of the Alleghany mountain region, a piece of new ground, treated in the same manner, produces spontaneously a crop of timothy. Nor can either clover, timothy, their roots or seeds, be found in those places before they are cleared. Other facts to the same purport could be cited in hosts. It might seem superfluous to add, that they are directly opposed to our author's hypothesis, respecting the production and diffusion of vegetables. The earth was not made to be barren, but to be the fruitful home of something possessed of life. It does seem, therefore, that when a spot of ground becomes peculiarly favourable to the growth of certain vegetables, those vegetables spontaneously arise in it, precisely as other effects proceed from their causes."

Dr Caldwell, in opposition to the views of Dr Pritchard, holds the following ones.

"Certain species of vegetables abound in certain places, not because their progenitors were created in pairs or singly, and planted there; but because in soil, climate, situation, exposure, and other circumstances, those places were best adapted to their original production, their growth and propagation. On this principle, aquatic regions gave birth spontaneously to aquatic plants, mountain regions to mountain plants, and plains and valleys to the plants which cover them. The reader will judge for himself of the Doctor's reasoning and of ours. He will, in a particular manner, determine which of the two comports best with that unbroken aptitude, and uniform connexion between cause and effect, which we every where witness throughout the works of nature."

The views of Dr Pritchard respecting the origin and diffusion of animals are identical with those advanced respecting vegetables. "In given regions he finds certain animals more abundant than in

any others, and these he considers as the primitive homes of their original projectors." To this Dr Caldwell replies:

"In the same region we find an abundance of eagles, hawks of various species, owls, wolves, foxes, wildcats, rabbits, hares, squirrels, partridges, pheasants, doves, blackbirds, sparrows, finches, and many others, both quadrupeds and birds. According to our author's notion, this region must have been the place of formation and original residence of the first progenitors of all these animals. Let us suppose a male and female of each kind to have been thus created, and placed in the neighbourhood of each other. What must have been the issue? To render an answer to this question can puzzle no one. Every child is master of it. The beasts and birds of prey must have soon died of hunger, without enjoying a single meal, or have killed and made food of the others, and then died for want of more. Their death, from famine, was inevitable. And even the smaller birds and quadrupeds, that are not deemed predacious, if not thus devoured by their enemies, must have first eaten up the *pairs* of insects, worms, and plants, of the district, and then died of hunger themselves. In a short time the earth would have been as destitute of living beings, as it was when first called into existence. Thus would this scheme of creation have failed; and the Deity, profiting by experience, must have tried another. An hypothesis more triumphant in folly, or more arrogant in pretension, than one which thus virtually questions the wisdom of Heaven, cannot be imagined. And its absurdity is augmented not a little by the consideration, that, according to the principles of it, its author is compelled to derive from single individuals or pairs, every mosqueto, gnat, maggot, mite, and animalculum infusorium, that has existed since the flood! For he does not believe in spontaneous generation at all; but adheres to the maxim *omnia ab ovo.* Hence he has recourse to his first pairs of insects and worms, as well as of human beings, and represents the Deity as their especial manufacturer. We shall dismiss this subject with a single remark. However rich our author may be in the knowledge of individual facts and events, he appears to have attended but little to their relations as cause and effect. Although learned, therefore, as a historian, and well informed as a naturalist, we cannot pronounce him able, as a philosopher."

Dr Caldwell admits the correctness of Dr Pritchard's definition of the term species. "It includes," says Dr P., "only one circumstance, namely, an original distinctness and *constant transmission of any character.* A race of animals or plants, marked by any peculiarities of structure, which have always been constant and undeviating, constitutes a species; and two races are considered as *specifically different*, if they are distinguished from each other by some peculiarities, which one cannot be supposed to have acquired,

or the other to have lost, *through any known operation* of physical causes; for we are hence led to conclude that the tribes thus distinguished *cannot have sprung from the same original stock.*" Vol. I. pp. 90, 91.

We have not room for the detailed criteria laid down by Dr P. of sameness of race. These are, according to him, similarity of physical habits and character, subjection to the same diseases, resemblance of animal faculties, instincts and habits; ready admixture of breeds in a state of nature; analogy between the varieties of form, colour and the organization of parts, and changes of complexion by time and climate or from fortuitous circumstances. On each criterion Dr Caldwell offers in succession critical comments, which to our minds greatly impugn the positions of Dr Pritchard. We pass on to the main topic, on which we have the following pertinent observations by the author of the "Thoughts."

"For the illustration of this topic, let us suppose the original stock of mankind to have been the Caucasian, from which have descended at least three distinct and well marked varieties, the Mongolian, the African, and the American Indian. From this simple beginning our author has to people the world with its present races of men. Let us see how he will proceed, and vanquish the difficulties he will have to encounter.

"One of three events must first take place, neither of which is within the compass of probability; we might say *possibility*, and inconsistency with the laws which govern such occurrences, defy contradiction. A Caucasian father and mother must do what such a pair never has done, give birth to a true Mongolian, African, or Indian infant. Nor will one be sufficient. They must produce a pair, male and female, otherwise the race cannot be established. For the natural and healthy issue of a Caucasian and a Mongolian, an African, or an Indian, is necessarily a mixed breed, and does not belong to any race. The commencement of each new race required a concurrence of the same contingencies—the production of a male and female infant, of the same race with each other, but different from that of their parents.

Nor are these the only difficulties our author has to encounter, in his scheme of peopling the earth, as we find it. We will suppose them vanquished, and that he is in possession of a pair of African, Mongolian, or Indian infants, the offspring of Caucasian parents. If this pair remain among the Caucasians, they cannot propagate a different race, in its original purity. It is by no means certain that they will unite for that purpose, in as much as their predilections will more probably take another direction. But although they may thus unite and have issue, it cannot be admitted, because it does not

comport with experience, that their descendants will always intermarry with each other. They will cohabit with Caucasians, and the offspring will be mongrel. Our author must, therefore, separate them from their parental stock, and remove them to such a distance, that they will be beyond the reach of intercourse for ages. In no other way can he establish a completely different race. But, at an early period of the existence of man, when geography was unknown, how the descendants of an original stock could have wandered thus remotely from their primitive home, through unexplored and trackless regions, and amidst the perils of death from starvation, beasts of prey, and other accidents, is a problem whose solution we leave to others. Nothing but compulsion could have led to such an attempt at migration, nor could any thing but a miracle have rendered it successful.

"If, with some writers, we suppose the primitive stock of mankind to have been the African, the same difficulties must have been encountered in the production of the Caucasian. But admitting the Mosaic account of the creation of man to be correct as to locality, the supposition that Adam and Eve were *negroes* is highly *improbable*, not to use a stronger term. Within the reach of history there have been no Africans in the supposed region of the garden of Eden. Nor is the climate of the country suitable to them. It can scarcely be imagined, therefore, that the Deity, having so peculiarly favoured and honoured man, by creating him 'after his own image,' would sully his kindness, by placing him in a residence unadapted to his nature.

"But we have yet another objection to our author's hypothesis. Why did his fancied deviation from an original stock produce but three or four different races? Accident being unlimited, why has not the number been multiplied? In a particular manner, why did the event occur only in early times? Human nature is the same now that it has been for thousands of years. Wherefore is it, then, that new races do not start up, at present, as well as formerly? No such phenomenon has occurred within the memory of man, or the reach of history. Tradition speaks of migrations, floods, earthquakes, and wars. So do poetry and fable. But, on the subject of the production of new races of men, even *they* are silent. Every race believes itself original, and consider others as the result of degeneracy. But none designates the time when the degeneracy began, or the causes that led to it.

"According to our author's principles of analogy, new races ought to occur now, much oftener than at an earlier period. He asserts, we believe correctly, that varieties arise much more frequently in domesticated animals, than in wild ones of the same species. But civilization is to man what domestication is to horses, oxen, camels, dogs, sheep, hogs, goats, rabbits, and poultry. Mankind are much more civilized now than they were several thousand

years ago. The production of new races, therefore, should be more frequent.

"Our author's attempt to sustain his hypothesis by a reference to the occasional appearance of albinos, is futile. There exists no nation or tribe of albinos. Nor if there did, do they constitute a distinct race. The difference which makes them is superficial; a matter of mere colour, and nothing more. Complexion excepted, an African albino is a real African, and a Caucasian albino a real Caucasian. Nor do albinos always propagate their like. The descendants of those from an African stock are as often black as white; while such as are of Caucasian descent produce frequently perfect Caucasians. Let a colony of albinos be planted in an uninhabited island, all intercourse with the rest of mankind being prohibited, and a new race will not be the product. In every thing except colour, which will be mixed, the descendants will be identified with the original stock.

But we have a further objection to the ground on which Dr Pritchard refers to the albino variety, in support of his hypothesis. Albinism is a disease; at least an infirmity. It consists in a want of what is necessary to the perfection of man—that fine mucous tissue, which lies between the cuticle and the true skin, and gives the natural and healthy complexion. Nor are albinos so vigorous and hardy as the more perfect individuals of the races from which they spring. They are less capable of sustaining excessive heat, cold, exposure and fatigue. From a deficiency of the dark pigment on the iris, they are also, in a considerable degree, intolerant of light. As an evidence of their constitutional infirmity, they become prematurely old, and are rarely long-lived. We do not recollect an instance to the contrary. Instead of constituting, then, a new and distinct race, as Dr Pritchard seems inclined to allege they do, albinos are but enfeebled individuals of an original race."

Examining the subject on chronological data, Dr C. makes the following remarks:

"According to accredited dates, it is four thousand one hundred and seventy nine years since Noah and his family came out of the ark. They are believed to have been of the Caucasian race; and the correctness of the belief there is no ground to question. We shall assume it, therefore, as a truth, without adducing the reasons which seem to sustain it. Three thousand four hundred and forty-five years ago, a nation of Ethiopians is known to have existed. Their skins, of course, were dark, and they differed widely from Caucasians in many other particulars. They migrated from a remote country, and took up their residence in the neighbourhood of Egypt. Supposing that people to have been of the stock of Noah, the change must have been completed, and a new race formed, in seven hundred and thirty-three years, and probably in a much shorter pe-

riod. And near three thousand years ago the Greeks had a knowledge of a nation of people with a black skin, thick lips, and woolly hair. Since the earliest period of history, therefore, the present races of mankind have existed. The relation of these facts to the present discussion will appear hereafter."

The notice of the differences between the two most marked races, the Caucasian or white, and the African or black, is as follows:

"Under the term African, we shall include the Hottentots, the Boschesemen, and the Papuas, or negroes of Oceanica.

"The general diversity between the Caucasian and the African races is composed, like other aggregates, of many subordinate ones. It is corporeal and mental. The former consists of differences in colour, texture, and figure; the latter, in intellect and moral feeling. The difference of colour is almost universally represented to be seated alone in the rete-mucosum. This is a mistake. It is seated in both the rete-mucosum and the cuticle, the latter being considerably darker, as well as thicker, in the African, than it is in the Caucasian. The difference of texture exists chiefly in the hair and some of the bones, the former being, in the African, much more harsh and horny, and the latter denser, harder, and heavier. The difference of figure arises principally from the shape of the bones, their modes of articulation, and the form of the muscles; to which might be added, the form of the brain, that organ being known to give shape to the scull.

"As respects the colours of the two races, our analysis shall be brief. The Caucasian is fair and ruddy, and the African black, or of a deep and dusky brown. The ruddiness of the former race arises from the tinge of the blood, contained in the capillary vessels of the true skin, being visible through the rete-mucosum and the cuticle, both of which are very thin, and somewhat transparent. The colour of the latter is produced chiefly by the secretion of a dark pigment, by the vessels of the true skin, and its deposition in the cells of the rete-mucosum. This pigment appears through the cuticle, which, although, as already stated, much thicker and darker than in the Caucasian, is sufficiently transparent to show what is beneath it. In the African, the rete-mucosum is comparatively thick; whence arises the softness of his skin to the touch. When the human skin is examined with a microscope, it exhibits a great number of small sulci, or depressed lines, meeting and intersecting each other at different angles, with elevations between them; the whole resembling somewhat the surface of a bed-quilt. These elevations are much fuller, and in stronger relief in the African than in the Caucasian. In the former they resemble the interstices of a bed-quilt stuffed; in the latter, without stuffing. The skin of the African generates less heat than that of the Caucasian, and its temperature is therefore lower. We ought rather to say, that it more

powerfully and successfully resists the action of heat from without, tending to raise its temperature. It resists a low temperature with less power. Hence the superior fitness of the former for hot climates, and of the latter for cold ones. It is obvious, then, that the whole amount of difference between the skins of these two races is great—much greater, we apprehend, than it is generally supposed to be.

"The same is true as relates to the hair. But the precise difference here cannot be adequately made known in words. To be fully understood, it must be seen. The hair of the two races must be examined with a microscope. The difference in texture and character will then appear not only manifest but striking. As already stated, the African hair, although smeared with an unctuous and softening secretion, will be found to be harsh, crisp, and horny, and rough from a multitude of projecting points. That of the Caucasian, although less unctuous, is much more pliant, soft and smooth. It is also more distinctly fibrous in its texture than the other. In fact, the two productions are as different from each other, in their general appearance, we might say much more so, than many plants are, which botanists refer to different species.

"But the difference between the osseous and muscular systems of the two races is still more plain and striking, because the parts are larger, and can be more easily examined and compared. In the African, the bones of the head are thicker, more compact, and, therefore, stronger and heavier, than in the Caucasian, and the cavity of the cranium much smaller. The forehead being narrower and more retreating, the sincipital region is inferior in its capacity, in proportion to that of the occipital. The orbitar cavities are wider and deeper, and the zygomatic processes of the temporal bones larger and more projecting. Although the nose is short and depressed, its cavities are more capacious, and the olfactory nerves are spread over a more extensive surface than in the Caucasian. The upper maxillary bone is much broader and stronger, and projects more forward and outward, and the under one, being also thicker and stronger, but narrower in its body, and inclined outward to meet the other, has no projection to form a chin. Hence, in correspondence with the shape of the maxillary bones, the African has an upper lip of unusual depth from the nose to the mouth, an under one uncommonly short from the mouth downward, and instead of projecting, like that of the Caucasian, his chin retreats. In the strictness of technical language, he can scarcely be said to have a chin. Corresponding with the direction of his maxillary bones, his teeth point obliquely outward, while those of the Caucasian are nearly perpendicular. Nor is their position the only respect in which they differ from the teeth of the Caucasian. They are larger, stronger, sharper, further apart, and covered with a thicker and firmer enamel. The cuspidati are more truly canine,

and the projections from the grinding surfaces of the molares bolder and more pointed. In fine, they resemble much more the teeth of the ape, and are better fitted for cutting and tearing. In consequence of this general structure of the hard and soft parts, the African's mouth or muzzle projects considerably beyond his nose. To this may be added, as a further diversity, in an important organ, that by far the greatest portion of his brain lies behind a perpendicular line drawn from the external opening of the ear to the top of the head, while, in the Caucasian, the portions on each side of such a line are much more nearly equal.

"Corresponding in their character to the maxillary bones and the teeth, the muscles appropriated to the movement of those parts, are much larger and stronger in the African than in the Caucasian. Hence the superior power and dexterity of the former in biting and chewing hard substances. We once knew an African, who, in combats with his fellow servants, was almost as dangerous in his snaps as a dog. To sever a finger or a thumb, or to take a mouthful of flesh from the arm or the shoulder, was the act of but a moment. After what we have said, we need scarcely add, that it requires a severer blow on the head to fell an African, or fracture his scull, than it does to produce a similar effect on a Caucasian of the same size and strength.

"But we have not yet done with the bones of the head. The foramen magnum, in the occipital bone, is larger in the African than in the Caucasian race. The necessary consequence of this is, that the medulla oblongata, which passes through it and fills it, is also larger, as is indeed the whole of the spinal cord, in common with many of the nerves. We may here remark, that the nerves of the African generally are larger in proportion to his brain, than those of the Caucasian. In this he resembles the inferior animals, occupying a station between them and the individuals of the race with which we are contrasting him. Nor is his head equally well balanced on the spinal column. Such is the position of the condyles of the os occipitis, which rest on the atlas, that the portion of the head behind them preponderates over that which is before. This, added to the sloping of the forehead backward, gives to the African countenance that upward direction which it is known to possess. While the front line of the Caucasian countenance is nearly perpendicular, that of the African falls far behind the perpendicular, making with it an angle of many degrees.

"The difference between the upper extremities of the African and the Caucasian are peculiarly striking. In the former the clavicle is rather shorter and more crooked than in the latter, while, in proportion to his height, the arm is longer. An African of five feet eight or nine inches has an arm considerably longer than a Caucasian of six feet. Nor is this all. In the African the forearm is longer in proportion to the humerus than in the Caucasian. His

hand, which is not so large, is more bony and tendinous, and less muscular, and his fingers are longer, slenderer, and less fleshy. Hence when he strikes with his knuckles, in combat, he so frequently cuts his antagonist, while the Caucasian only bruises; or, at least, cuts less severely, by a blow of the same force. His nails project more over the ends of his fingers, are thicker and more adunque, and bear a strong resemblance to claws. The veins of his hand are smaller, we believe fewer, and differently distributed. From the small amount of blood, which circulates through it, the hand of the African is rarely very warm.

"In the African the bony fabric of the thoracic portion of the trunk is firmer than in the Caucasian, and differently shaped. The ribs are thicker and stronger, and so formed and placed, as to flatten the chest at the sides, narrow it before, and deepen it somewhat, from the sternum to the spine.

"Descending to another important part of the body, we find further differences. In the African of both sexes, the bones of the pelvis are slenderer than in the Caucasian. In the male African that cavity is less capacious, and in the female more so, than in the male and female of the Caucasian race. Nor is it in the bony structure only of this portion of the body that a difference exists. The muscles also are dissimilar. In the African, the muscles that cover the sides of the pelvis are less full than in the Caucasian, while those that cover it behind are more so. Hence the narrowness of the hips of the former, from side to side, and the ungraceful projection of the nates backward. Corresponding to that of the hips, the form of the whole African thigh differs materially from that of the Caucasian. It is more flat laterally, thinner from side to side, and deeper from front to rear.

"In the two races the lower extremities are, in their relative proportions, the reverse of the upper. In their entire measurement, they are shorter in the African than in the Caucasian, while the thigh, which corresponds to the humerus, is longer in proportion to the leg, which is the part that corresponds to the forearm. The superior length of the African thigh in proportion to the leg, is a point which has received from naturalists but little attention. Yet it is of peculiar interest in the present inquiry. The difference in the articulation of the bones of the thigh and leg in the two races, which is somewhat striking, can be learnt only by inspection. It may be observed, however, that it is such as to produce in the African a perceptible flexure of the limb, at the knee, in a forward direction. His lower extremity, therefore, is not so straight as that of the Caucasian. The difference in the bones of the leg is great, and we might add, peculiarly characteristic. In the Caucasian, the tibia or large bone is straight, and the fibula or small one somewhat crooked. In the African the reverse is true. By a bend a little above its middle, the tibia is gibbous in front, whilst the fibula is

straighter than in the Caucasian. In the two races the muscles of the leg are also very different. This is more especially the case with the gastrocnemii. In the African the belly of these muscles is small, and situated near the hock, while their slenderer portions and the tendo Achillis, which is attached to them, are long. This gives to the limb a very unsightly form. In the Caucasian the belly of the gastrocnemii is full and round, and situated lower, so as to bestow on the leg its fine proportions and elegant shape. Here the tendo Achillis is short.

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"But all the differences between the two races are not yet enumerated. In the African the stomach is rounder and the blood of a darker colour than in the Caucasian race. In their genital organs they also differ much from each other. In the African the penis is larger, and the testes smaller, and he has no *frenum præputii*. These circumstances are the more important, because they assimilate him, in the parts we are considering, to the male ape, and other inferior animals. Indeed, in those organs, he resembles the ape fully as much as he does the Caucasian. Nor is the resemblance confined to them alone. It extends to the head and face, the arms, hands, especially the fingers and nails, the flatness of the sides of

the chest, the bones of the pelvis and the muscles that cover them, the lateral flatness and thinness of the thigh, its depth in the opposite direction, its length compared to that of the leg, the forward bend of the knee, the general form of the foot and its connexion with the leg, and the length and taper of the toes, together with the form and position of the nails. In fine, let a well formed Caucasian, an African possessing the real likeness of his race, and a large ourang-outang be placed along side of each other, and the gradation of figure, from the first to the last, will be obvious and striking. The Caucasian will be most perfect, the African less so, and the ape the inferior of the three. It will be found, however, that in several leading and characteristic points, the resemblance between the African and the ourang-outang will be nearly as strong, as between the former and the Caucasian. And if, for the *common* African figure, that of the Boscheseman or the Papua, be substituted, the strength of resemblance to the ape will be much increased. We had once an opportunity to examine the person of a Boscheseman, and we have a lively recollection of our conviction, at the time, that it did not, in figure, stand more than midway between the large ourang-outang and the Caucasian. Among other peculiarities of form, that being had a very unsightly projection of the nates, produced, not entirely by muscle, but in part by a substance resembling in texture the protuberance on the buffalo's shoulder, or the massy tail of the Thibet sheep. We have seen apes with a similar production, only somewhat firmer. Near to each shoulder of the Boscheseman was another moss of the same anomalous substance. We were assured that both these, and those on the nates, were natural, and not the result of diseased growth. The likeness of the Boscheseman to the ape, in expression of countenance, as well as in shape, is so striking, as to be recognised by every one. The quick and peculiar movement of the eyes and brows, which so strongly characterizes the ape, is practised also by the human savage. In White's essay, then, on the "Gradation in man," there is much truth, and the author might have carried his comparison further than he did.

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"The domestic dog, the wolf, and the hyena, are acknowledged to belong to different species. Yet let a skeleton of each be prepared, and it will be much more difficult to distinguish one from the other, than to distinguish an African from a Caucasian skeleton. The same is true of the skeletons of the tiger and the large Asiatic panther. Indeed it is much easier to distinguish between the skeletons of a Boscheseman and a Caucasian, than between those of any two species of the cat kind, that are similar in size. We may safely add, that there is no more difficulty in distinguishing between the African and Caucasian skeletons, than between those of the horse and the ox.

"Such, then, are the leading differences between these two races of mankind, not alone in the colour and texture of the hair and skin, but in many other important organs. With the extent of the effects thus before us, let us again advert to the causes, to which they have been ascribed, that, by a comparison of the product with the reputed source, we may the better ascertain what degree of natural relation exists between them."

"It must be shown," says Dr Caldwell, "either that the conversion of one race into another has been effected by climate as a positive event; or that under the influence of that agent, the change is now in progress, and that from the well known nature aud power of the cause, there is good ground to believe that it will be completed."

To this inquiry he proceeds in the following terms:

"That the subject may be fairly discussed, we shall make, for the occasion, two concessions; that mankind are the descendants of a single pair; and that, as heretofore admitted, that pair were Caucasians. Until changed by climate, their progeny were necessarily

of the same race. To render our disquisition as acceptable as possible, we shall moreover assume, as its basis, the Mosaic account of the propagation of man. According to that, Noah was the ninth in descent from Adam; having been born and reared in the land of his forefathers, there is no reason to believe that he had deviated from them in race. We are authorized, therefore, to assume it as a postulate, that he and his family were Caucasians.

"When that household descended from the ark, they were eight in number, all of the same race, and by them the earth was to be peopled, with the several races which now inhabit it. As we possess no information to the contrary, we are bound to believe that physical causes were the same then that they are now. The influence of climate was no stronger, and could not, therefore, in a shorter time, produce in man the changes necessary for the formation of a new race. But, as already mentioned, in seven hundred and thirty-three years from the time of Noah's debarkation from the ark, a nation of the Ethiopians existed; and a party of them, migrating from the Indus, the chief river of their native country, settled on the borders of upper Egypt. They had black skins, and features different from those of the ancient Egyptians, who appear, from their mummies, to have been Caucasians. Were the changes, which thus constituted a new race, the product of climate? A reasonable answer to this question can be derived only from the effect of climate, at the present time, and within the period known to history. And it must be negative. In seven hundred and thirty-three years, climate cannot now produce a new race; nor has it been able to do it, in that period, for the last two thousand years. If the following facts do not actually demonstrate the truth of this, they give to it such strength of probability, as is tantamount to demonstration.

"It is near seventeen hundred years since the Jews were banished from their native country. Soon afterwards a colony of them migrated to the coast of Malabar, the climate of which is similar to that of the Indus, and settled among a people whose complexion is black. Their religion prohibiting them from intermarrying with the natives, they have kept their blood unmixed. The consequence furnishes, in the present disquisition, an argument which we deem unanswerable. No change in their race has been produced. They are as perfect Caucasians now, as they were when they migrated from the land of Judea. They were visited some years ago by Dr Claudius Buchanan, who states, in his travels, that both in 'complexion and features' they resemble very strikingly the Jews of Europe. If, then, in seventeen hundred years, of latter times, the climate of India has produced no change in the Caucasian race, is it probable that in seven hundred and thirty-three years from the subsidence of the deluge, it could have so entirely revolutionized it, as to convert it into another? We feel convinced that no one of intelligence will reply in the affirmative.

"It is somewhat more than a thousand years since Persia, the god of whose inhabitants was fire, submitted to the yoke of the Moslemin. Rather than renounce their religion, a colony of the fire worshippers fled immediately to India, and settled there, amidst a people of a black complexion. Their descendants in that burning region are still known by the names of the Parsees. Like the Jews, they have been prevented, by their religious tenets, from intermarriages with the natives. No mixture of the blood, therefore, has changed them. Nor have they been changed by climate. Colonel Wilks, who is familiar with their appearance, assures us that they are a fine race of men, perfectly Caucasian in complexion, feature, and figure, and altogether dissimilar to the people around them.

"Three centuries have elapsed, since the Portuguese colonized Zanguebar and Mosambique, on the eastern coast of tropical Africa; and, at a much earlier period, the same places had been settled, and considerable cities had been built in them, by large bodies of Arabian traders. But, although the colonists have been greatly reduced in number, and deteriorated in constitution, by the sickliness of the climate, and although their complexion has been somewhat darkened by the action of the sun, no perceptible progress has been made in the conversion of them into a different race. In feature, figure, and hair, those whose blood is unmixed, are as dissimilar to the African now, as their ancestors were, when they migrated from Europe. The same is true of the descendants of the Spaniards, who settled in tropical America, in the early part of the sixteenth century. Where their blood has remained pure, their race is unchanged. They are Spaniards still in both complexion and features. Of the descendants of the English, who have resided in the West Indies, for several generations, the same may be asserted. With some loss of ruddiness of complexion, their English character is still complete. The Moors have inhabited some parts of tropical Africa, time immemorial; yet, neither in feature, complexion, figure, nor hair, have they, within a thousand years, made any more of an approximation to the negroes, than the negroes have to them.

"We venture to say, then, and speak confidently, that no case exists now, or has ever existed, of the conversion of the Caucasian into the African race, or even of the production of a tendency to it, by the influence of climate. Nor has the reverse event ever occurred. The African race has never, within the memory of man, or the reach of history, been changed by climate into the Caucasian; nor has the slightest tendency of the kind been produced by it. It is nearly two centuries since the Africans were first introduced into our own country. The eighth generation from the original stock is now living, and the race is unchanged. Those whose blood is unmixed, are as perfect Africans now, as their ancestors were, when they left their native country. As relates to the real

characteristics of race, their complexion, hair, features, and figure, are unaltered. The stories propagated by a few, and credited by many, of their approximation to the Caucasian character, are groundless. Observation disavows them; and they owe their being to a spirit of theory, and a resolution to maintain *per fas et nefas*, the hypothesis of the original unity of man. Eradicate that spirit, and negroes will be no longer reported to be changing into white men. That many of them are improved, in personal appearance, by good fare and kind treatment, is true. So are our horses and oxen. But their races continue. They are horses and oxen still. Of the Africans in the United States the same is true. Yet had they even become lighter-coloured, the event would not have been surprising. On the contrary, it might have been considered natural, in the ordinary line of physical cause and effect. Black is the native complexion of the African, as fair and ruddy is of the Caucasian. And the depth of his colour is in proportion to the soundness and vigour of his health. When they are impaired, we know, from observation, that his complexion becomes lighter. Disease renders him pale, as it does the Caucasian. Remove him to a climate unfavourable to his constitution, and with the loss of his health and vigour, he will lose somewhat of the depth of his glossy black. Had the climate of the United States, then, actually diminished the darkness of the African complexion, the fact would have been explicable on the principles here stated, without being referred to any tendency to a change of race. But although negroes are best adapted to a tropical climate, where the temperature is uniform and high, yet our hot and long summers make such amends for our cold but short winters, that they retain, in the United States, both their health and complexion. We have seen many American-born Africans, of the seventh and eighth generations, whose depth and glossiness of colour would render them remarkable in the country of their ancestors. Nor is the real character of their hair, features, and figure, any more changed than the colour of their skin. If their hair is longer, it is because they cover it, comb it, and are otherwise careful of it; circumstances which, at the same time, add to its blackness. In house-servants, who are well clothed, cleanly, and healthy, and who receive a full supply of nourishing food, both the skin and hair are darker than in those who labour nearly naked in the field. So far is it from being true, as some contend, that the African is indebted to the tropical sun for his complexion. Besides, those parts of their bodies which are always and most carefully covered and protected from the sun, are of the deepest black. Heat does not blacken them by changing their skin, as fire chars wood; a vulgar notion which many entertain. Even men distinguished in science, have mistakenly attributed their blackness to carbon deposited or generated in the rete-mucosum. In truth, their colour is the result of a specific secretion. The black pigment, in which it consists, is

straighter than in the Caucasian. In the two races the muscles of the leg are also very different. This is more especially the case with the gastrocnemii. In the African the belly of these muscles is small, and situated near the hock, while their slenderer portions and the tendo Achillis, which is attached to them, are long. This gives to the limb a very unsightly form. In the Caucasian the belly of the gastrocnemii is full and round, and situated lower, so as to bestow on the leg its fine proportions and elegant shape. Here the tendo Achillis is short.

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"Three centuries have elapsed, since the Portuguese colonized Zanguebar and Mosambique, on the eastern coast of tropical Africa; and, at a much earlier period, the same places had been settled, and considerable cities had been built in them, by large bodies of Arabian traders. But, although the colonists have been greatly reduced in number, and deteriorated in constitution, by the sickliness of the climate, and although their complexion has been somewhat darkened by the action of the sun, no perceptible progress has been made in the conversion of them into a different race. In feature, figure, and hair, those whose blood is unmixed, are as dissimilar to the African now, as their ancestors were, when they migrated from Europe. The same is true of the descendants of the Spaniards, who settled in tropical America, in the early part of the sixteenth century. Where their blood has remained pure, their race is unchanged. They are Spaniards still in both complexion and features. Of the descendants of the English, who have resided in the West Indies, for several generations, the same may be asserted. With some loss of ruddiness of complexion, their English character is still complete. The Moors have inhabited some parts of tropical Africa, time immemorial; yet, neither in feature, complexion, figure, nor hair, have they, within a thousand years, made any more of an approximation to the negroes, than the negroes have to them.

"We venture to say, then, and speak confidently, that no case exists now, or has ever existed, of the conversion of the Caucasian into the African race, or even of the production of a tendency to it, by the influence of climate. Nor has the reverse event ever occurred. The African race has never, within the memory of man, or the reach of history, been changed by climate into the Caucasian; nor has the slightest tendency of the kind been produced by it. It is nearly two centuries since the Africans were first introduced into our own country. The eighth generation from the original stock is now living, and the race is unchanged. Those whose blood is unmixed, are as perfect Africans now, as their ancestors were, when they left their native country. As relates to the real

characteristics of race, their complexion, hair, features, and figure, are unaltered. The stories propagated by a few, and credited by many, of their approximation to the Caucasian character, are groundless. Observation disavows them; and they owe their being to a spirit of theory, and a resolution to maintain *per fas et nefas*, the hypothesis of the original unity of man. Eradicate that spirit, and negroes will be no longer reported to be changing into white men. That many of them are improved, in personal appearance, by good fare and kind treatment, is true. So are our horses and oxen. But their races continue. They are horses and oxen still. Of the Africans in the United States the same is true. Yet had they even become lighter-coloured, the event would not have been surprising. On the contrary, it might have been considered natural, in the ordinary line of physical cause and effect. Black is the native complexion of the African, as fair and ruddy is of the Caucasian. And the depth of his colour is in proportion to the soundness and vigour of his health. When they are impaired, we know, from observation, that his complexion becomes lighter. Disease renders him pale, as it does the Caucasian. Remove him to a climate unfavourable to his constitution, and with the loss of his health and vigour, he will lose somewhat of the depth of his glossy black. Had the climate of the United States, then, actually diminished the darkness of the African complexion, the fact would have been explicable on the principles here stated, without being referred to any tendency to a change of race. But although negroes are best adapted to a tropical climate, where the temperature is uniform and high, yet our hot and long summers make such amends for our cold but short winters, that they retain, in the United States, both their health and complexion. We have seen many American-born Africans, of the seventh and eighth generations, whose depth and glossiness of colour would render them remarkable in the country of their ancestors. Nor is the real character of their hair, features, and figure, any more changed than the colour of their skin. If their hair is longer, it is because they cover it, comb it, and are otherwise careful of it; circumstances which, at the same time, add to its blackness. In house-servants, who are well clothed, cleanly, and healthy, and who receive a full supply of nourishing food, both the skin and hair are darker than in those who labour nearly naked in the field. So far is it from being true, as some contend, that the African is indebted to the tropical sun for his complexion. Besides, those parts of their bodies which are always and most carefully covered and protected from the sun, are of the deepest black. Heat does not blacken them by changing their skin, as fire chars wood; a vulgar notion which many entertain. Even men distinguished in science, have mistakenly attributed their blackness to carbon deposited or generated in the rete-mucosum. In truth, their colour is the result of a specific secretion. The black pigment, in which it consists, is

formed from the blood. But it is not carbon. It is not as combustible as that substance; nor can it be converted, by burning, into carbonic acid gas. The secretory process which generates it is, we repeat, specific. It is, moreover, as peculiar to those possessing black skins, and as distinctive of their race, as the process which produces castor is of the beaver, or that producing musk of the animal to which it belongs."

Room is not allowed us for specifying the many other forcible objections to the opinion of the unity of the human race, as held by Dr Pritchard; and, for the same reason, we are constrained to omit many explanations of seeming incongruities by supposing the fact of different races, unlike each other in many particulars, and manifestly unequal in their intellectual powers. We cannot, however, forbear from inserting the following observations of Dr Caldwell on this point.

"It is singular that in the discussion of the question respecting the several races of men, mere animal or organic differences, we mean those of a corporeal character, have been almost exclusively attended to. As far as our recollection serves us, those of morals and intellect have never received the consideration they deserve. Yet we venture to assert, that in their aggregate, they are no less striking and characteristic than the others. Nor are they less distinctive as attributes of race. We trust, therefore, that a brief notice of them will not be without interest. We deem it moreover well calculated to shed light on the subject we are discussing.

"As relates to intellect, a vast pre-eminence belongs to the Caucasian. Nor is this, as many contend, exclusively the result of a better education. It is as truly the gift of nature as his complexion and figure. As well may the fine proportions of his head, and the symmetry of his features, be pronounced the mere issue of training, as the endowments of his intellect. They result alike from the original superiority of his organic nature.

"In the history of man, there must have been a time, when the Caucasian was as uninstructed as the African or the American Indian. Like them, he must have once been 'nature's simple child.' Wherefore, then, in the career of intellectual improvement, has he left them at such an immeasurable distance behind him? And why is this the case, not accidentally and in some places, but always and uniformly, wherever he is found? The answer is easy. He is superior to them in native intellectual faculties. He is so endowed, by reason of a higher and better organization, that he can instruct himself, by attending to the objects of nature around him, observing their phenomena, and studying their laws. In other words, he can read and interpret the book of nature, the true source of knowledge and wisdom, and thence derive instruction. And thus, of necessity,

did his education begin. But this the African and the Indian cannot do; at least they cannot do it with the same facility, and to the same extent, because they are inferiorly organized and endowed. Nor, for the same reason, can the Mongolian and the Malay thus amply instruct themselves. Nature has been less bounteous to them than to the Caucasian race. To the eye of a competent judge they bear, on their aspect, the stamp of inferiority. Nor is it possible for it to be otherwise, unless they were differently organized; for organization is as much the source of intellectual as of muscular power. Were the present a suitable occasion to dwell on it, all this is susceptible of proof.

"To the Caucasian race is the world indebted for all the great and important discoveries, inventions, and improvements that have been made in science and the arts. Without specifying any of them, we say *all*, and do not speak extravagantly. The African and Indian races* have not made one; the Mongolian none that are really great. The Caucasian race make such uniform and rapid progress in intellectual improvement, that every succeeding generation is far in advance of that which immediately preceded it. So true is this, and so great and striking the advance in knowledge, that could Vaucanson, Black, and even a Newton, return to earth, they would find themselves but little more than novices in many parts of their favourite sciences. But what, in this respect, is the condition of the African and Indian races? Motionless; fixed to a spot, like the rocks and trees in the midst of which they dwell; each generation pursuing the same time-beaten track, with that which went before it. Even century succeeds to century, and the last finds them the same degraded and unimproved beings with the former. We speak not of the Africans who have mingled with the Caucasians, and acquired some smattering of their knowledge. We refer to those confined to their native country, and the society only of their own race. And we are justified in saying, that for the last five hundred years, or to as early a period as our acquaintance with them embraces, they do not appear to have advanced of themselves a single step in the knowledge of nature, or the practice and improvement of the arts. Even under all the instruction that can be imparted to them, their intellectual inferiority remains proverbial. The few among them who acquire a very moderate share of knowledge, can scarcely be said to constitute an exception to the general rule. Under all the circumstances of the case, we do not hesitate

"* To this the invention of the Cherokee alphabet forms no exception. The author of that has much Caucasian blood in his veins. His father was a Scotchman. He is, therefore, a half breed. Nor is this all. The train of thought, which led to the invention, was first awakened by a letter written by a white man. Without the influence of that 'speaking leaf,' the alphabet would yet have had no existence. It is virtually, therefore, a Caucasian production."

to repeat our conviction, that the stationary condition of the Africans and Indians, contrasted with the rapidly improving one of the Caucasians, constitutes between the races a distinction as characteristic and strong, and much more important, than the differences in the form of their features, and the colour of their skins. Nor is the one more radical and immovable than the other. As easily may a tribe of Africans or Indians be rendered white in their skins and comely in their features, as equal to the Caucasians in intellectual endowments. To effect either, a change of organization is essential. As relates to the mental cultivation and improvement, the Indian and African races resemble the inferior animals. They do not profit by experience. The descendants equal their progenitors, but do nothing more. The former do not, as is the Caucasian practice, begin where the latter terminate, and make further advances. If the son can imitate the sire, he is content, and cherishes no ambition to surpass him. Hence, as already observed, each generation grovels through the same humble course, without attempting to arise above it, or appearing to know that there is any thing better."

"The native bent of Caucasians is to civilization. Of the North American Indians, the reverse is true. Savagism, a roaming life, and a home in the forest, are as natural to them, and as essential to their existence, as to the buffalo, or the bear. Civilization is destined to exterminate them, in common with the wild animals, among which they have lived, and on which they have subsisted. All experience admonishes of this. In numbers the Indians and buffaloes of our western wilds diminish alike and from similar causes. And they retreat alike from civilization. Neither of them can flourish in a domesticated state. As soon, and as much in conformity with nature, shall the olive be fruitful on the coast of Labrador. Every effort hitherto made to civilize and educate the Indians, has but deteriorated them, and tended to annihilate them as a people. And such, from their moral constitution, must continue to be the case, until the race shall become extinct. Let the history of the Indians of New York and New England be consulted, and such is the only lesson it will teach. And it will teach it conclusively. Nor, when fairly interpreted, does the history of the Creeks, Cherokees, and Chickasaws, inculcate a different one. It speaks oracularly of the extinction of the aborigines. But one expedient exists, by which a trace of them can be saved; intermarriages with another race. By the requisite means, half and quarter-breeds, and those having still less of the Indian in them, may be educated, and rendered useful members of civil society. But as readily shall the wolf and the fox become faithful house-dogs, as the entire Indian a civilized and cultivated man."

On the question, of how far the Indians may be supposed capable of improvement, the author offers the following additional remarks.

"Whatever amendment may have taken place in the condition of the Indians of the west and south, (and it is far below what report would make it,) is to be ascribed chiefly to a mixture of races. Half breeds, as already mentioned, may be somewhat civilized and instructed; and they are, for the most part, chiefs and rulers. The present generation of real Indians are similar to their progenitors, except in the use of the hatchet and scalping knife. And in that they are restrained by necessity and fear. Give them an opportunity to do it with impunity, and they will riot in blood as ruthlessly as their forefathers. The moral character, then, we say, of the Indian, especially his radical unfitness for civilization, constitutes between him and the Caucasian a much more important line of distinction, than the difference in the form of their features, and the colour of their skin.

"For evidence corroborative of our views respecting the character, condition, and prospects of the Indians generally, but especially of the Cherokees, we might refer to a late state paper issued at Washington, entitled, a 'Report from the Committee on Indian Affairs, respecting the removal of the southern Indians.' That document, which is written with no common ability, is the result of long and patient inquiry by the members of the committee. It is fairly presumable, therefore, that its statements are correct. From many passages to the same effect, we extract the following:

"'The true nature of the calamity which threatens them, (the southern Indians,) and from which some power competent to save them is invoked, by so many considerations of generosity and pity, will be partially understood, when the fact, which to many must be incomprehensible, is stated, that out of a population of 60 or 65,000 souls, in the enjoyment of twenty or thirty millions of acres of fertile land, 50 or 55,000 may be said to have *no property at all*, and that a large portion of them are in fact *below the condition* of the *common paupers* among the whites.'

"Again; 'The number of those who control the government (of the Cherokees) are understood not to exceed twenty-five or thirty persons. These, together with their families and immediate dependents and connexions, may be said to constitute the whole commonwealth, (consisting of "12,000 souls") so far as any real advantages may be said to attend their new system of government. Besides this class, which embraces all the large fortune-holders, there are about two hundred families, constituting the middle class, in the tribe. This class is composed of the Indians of *mixed* blood, and *white* men, with Indian families. All of them have some popularity, and may be said to live in *some* degree of comfort. The committee are not aware that a *single* Indian of *unmixed* blood belongs to these two *higher* classes of Cherokees. The third class of the free population is composed of Indians, properly so denominated, who, like their brethren of the red race *every where else*, exhibit the same

characteristic traits of *unconquerable indolence*, *improvidence*, and an *inordinate love of ardent spirits*. They are the tenants of the wretched huts and villages in the recesses of the mountains, and elsewhere, remote from the highways, and the neighbourhood of the wealthy and prosperous. It will be almost incredible to those who have formed their opinions of the condition of the Cherokees from the inflated general accounts found in the public journals of the day, when it is stated, that this class constitutes, perhaps, *nineteen out of twenty* of the whole number of souls in the Cherokee country.'

"Although not explicitly so stated, it is palpably the opinion of the committee, that the Indians *cannot be civilized*; but that the effort to that effect will extinguish them."

An argument, though not a new one, in favour of the benevolent scheme of African colonization, is furnished by Dr Caldwell. When speaking of each race inhabiting its particular region, where it best flourishes, he says,

"But tropical Africa is the native climate of the negro race, where they enjoy most health, live to the greatest age, and attain the highest perfection of their nature. It is as really their home, as the arctic circle is of the polar bear. As it evidently comported, then, with the scheme of the population of the earth, that tropical Africa should be inhabited by human beings, aptitude called for the negro race, as the best suited, if not alone suited, to the climate and situation of that portion of the globe. But how was that race to be brought into existence? Was it to be done originally, by a creative act, and in a short time, at an early period of the world? Or slowly, and at a much later period, by a gradual change of another race? Which process accords best with the beneficence of the Deity, and his general procedure in stocking the earth with animals? To us the question seems easily solved. The former method is in every respect preferable.

"A negro race created originally and planted in Africa, would enjoy at once the privileges and favours conferred by their Creator on other beings. No painful and lingering change in their constitution would be necessary to fit them for their place of residence. They would be healthy and happy, vigorous and fruitful from the beginning, and the country would soon be peopled by their descendants. No degeneracy would occur in the race, on account of a want of adaptation to the climate. The aptitude which prevails in all other parts of creation would prevail also here."

In concluding our notice, at this time, of the "Thoughts on the Original Unity of the Human Race," we are sure that our readers, after having perused the numerous passages which we have introduced from the work, will join us in opinion, that the ingenious author has acquitted himself of his task with equal ability and good

taste. The uncommon interest of the subject has not been in aught diminished in his hands, and we are justified in expressing our hopes, both for the sake of philosophical physiology and the advancement of medical literature, that the present critical commentaries of Dr Caldwell on the learned work of Dr Pritchard, is but the *avant coureur* of a fuller and more complete exposition of the whole subject, including many interesting facts and literary disquisitions, which, though analogical, cannot but enliven the narrative, and give additional point to the argument.

The present essay having been printed at a distance from the author's residence, he was not able to superintend it in its progress through the press; and of course he must be held clear of blame for sundry little inaccuracies of typography and expression, which the reader will easily detect.

Art. XVI.—THE EPIDEMIC CHOLERA.

Die asiatische Cholera in Russland in den Jahren 1829 *und* 1830. *Nach russischen amtlichen Quellen bearbeitet, von* J. R. Lichtensædt, *Doctor und Professor. Berlin*, 1831. 8*vo. pp.* 218.

Uber die Cholera, die im letzten Herbste und Winter in und um Orenburg herrschte, von Dr Rang, *Russisch-Kaiserl-Staatsrath und Ritter, mitglied der medicinal-Behörde in Tambow. Berlin, Aug.* 1830. 12*mo. pp.* 170.

History of the Epidemic Spasmodic Cholera of Russia, including a copious account of the disease which has prevailed in India, and which has travelled under that name from Asia into Europe. Illustrated by numerous official and other documents explanatory of the nature, treatment, and prevention of the malady. By Bisset Hawkins, M.D., *Fellow of the Royal College of Physicians, Professor of Materia Medica and Therapeutics in King's College, and Physician to the Westminster General Dispensary. London*, 1831. 8*vo. pp.* 306.

Fourteen years ago the epidemic cholera first made its appearance in India; since then it has continued to prevail, with but short

intermissions, up to the present period. By successive but rapid strides, it extended itself from the banks of the Ganges, where it arose, over the greater part of the eastern world, and has finally penetrated into Europe, the north eastern portions of which are now suffering from its ravages. The fearful and rapid extension of the disease, as well as the mortality with which it is attended, render it a subject of deep interest to every one, but especially to the members of the medical profession. Disregarding those laws by which the rise and progress of epidemical diseases have been supposed to be governed, unimpeded in its course by mountains or seas, and prevailing alike in all climates and seasons of the year, and amid every vicissitude of weather, to determine the period of its final cessation, and the countries which may be considered safe from its visitation is impossible;—human foresight fails in its attempts to ascertain either of these points. The epidemic has already travelled over a portion of the earth's surface equal to upwards of *seventy* degrees of latitude, and *one hundred* of longitude, and it may, for aught we can see to the contrary, include, in its future progress, the remainder of the globe. There is no country the inhabitants of which can consider themselves placed beyond its reach; even the broad expanse of the Atlantic cannot be considered a certain barrier to its ingress, sooner or later, into the United States. To become acquainted with the history of this appalling malady, therefore, and to investigate its nature and its causes, must be the desire of every physician, even of this country, whether considered as subjects merely of rational curiosity, or, in anticipation of its appearance amongst us, to enable them to devise, in advance, the best means for its prevention or its cure.

So far as regards the disease during its prevalence in India, the various official reports of the surgeons attached to the different divisions of the British army in that country, supply us with ample details, while from the official documents collected by Professor Lichtenstædt, though less complete in many particulars than the former, we become acquainted with the facts in relation to the cholera as it appeared in Europe. Of the identity of the disease in the two countries there can exist no doubt,—on this point the documents in our possession furnish the most conclusive evidence.

Availing ourselves of the documents here indicated, as well as of the works of Drs Rang and Hawkins, and the communications made to the Royal Academy of Medicine at Paris, we proceed to lay before our readers a brief sketch of the history, character, and the

causes, so far as they have been ascertained, of this appalling epidemic.

To the commencement of the disease in India we have already alluded; this occurred during the summer of 1817, when various parts of the Delta formed by the river Ganges, experienced for the first time its ravages. In the ensuing year the epidemic had extended as far north as Saharunpore, high up on the Jumna, and to Cape Comorin on the south; its westernmost limit being at Bombay and Surat, its easternmost at Sylhet. Moving towards the interior from the mouth of the Ganges, it spread itself over a space including four hundred and fifty square miles. In 1819 it attacked the isles of France and Bourbon, in twenty-one degrees of south latitude. In the first of these islands it appeared in the autumn: the number destroyed by the disease is estimated by one authority at 20,000, and by another, the governor's official report, at 7000; the latter is probably the most correct. In the island of Bourbon the disease begun early in December. Of two hundred and fifty-seven persons seized with it, one hundred and seventy-eight died. Pursuing its route to the south and east, the epidemic invaded, also, the Indio-Chinese peninsula. In 1820 it ravaged Siam, Malacca, the Philippine Islands, the southern provinces of China, and Guzzerat in India. In the town of Bankok of Siam, alone, 40,000 are said to have fallen victims to the disease. In 1821 it is reported to have destroyed 60,000 subjects of the prince of Oman, around Muscat; and in the island of Java 102,000 individuals; of these deaths 17,000 are referred to the city of Batavia. During this year the disease reached Bahrein, Bassora, Bagdad, Bushire, and Shiraz. In this latter city, the population of which is 40,000, there died 16,000 within the first few days. In Bassora 18,000 individuals perished, of whom 14,000 died in two weeks. During the succeeding winter the disease became dormant in both Persia and Syria. In 1822 it spread to Ispahan, Teheran, Tabriz, Moussul, and Diarbekir, visiting Bagdad and Aleppo; and it reached, in 1823, the island of Amboyna, in one hundred and twenty-seven degrees of east longitude, extending, also, to Antioch, in longitude thirty-six degrees, and to Astrakan, in Asiatic Russia, in latitude forty-six degrees north. Thus it spread, in seven years, over ninety-one degrees of longitude, from Antioch to Amboyna, and sixty-seven degrees of latitude; from the isle of Bourbon to Astrakan—destroying in its course not less than 6,000,000 of human beings.

The disease is generally understood to have broken out first at Jessore, a city eighty or ninety miles northeast from Calcutta, in the middle of August 1817; it appears, however, to have prevailed to a considerable extent in the district of Nuddea, west of the Hoogly, as early as May and June. In July it appeared also at Patna, near three hundred miles directly northeast of Calcutta. By the middle of August, at Calcutta, at Dacca, and Dinapore; on the 17th at Sylhet and Jessore; by the end of August, at Boglipoor and Monghyr; September 15th, at Balasore; 17th, at Buxar; 18th, at Chupra and Ghazeepoor; and, by the end of November, at Rewah and Cuttack, the two last places being separated by at least four hundred miles. The causes producing the disease appear to have been in a languishing or quiescent state during the winter of 1817; but in the months of April and May 1818, they were manifested again with extreme violence, not only in many of the places where the disease had already appeared, but also at Ougein, Hooshungabad, Nagpore, with numerous intervening districts, and at Ganjam; all these being nearly on a line of six hundred and forty miles, from northwest to southeast. In various other places on a line north and south, of six hundred miles, from Goruchpore to Visgapatam, the disease was also prevalent during the same period of the year 1818. At Bombay it arrived in August, at Madras in October, and at Ceylon in December. During this year the disease appeared in its most malignant form at Benares, where, in two months, fifteen thousand perished. At Allahabad, also, forty or fifty died daily, and in the district of Goruckpore thirty thousand were carried off in a month. Between the 6th and 7th of November, the epidemic had reached the grand army of India, which, on the approach of the Pindarree war, had been concentrated at Jubbulpore, Mundellah, and Sauger, under the command of the Marquis Hastings. It consisted of ten thousand troops and eighty thousand followers. The disease for the first few days was confined to the lower classes of the camp followers, but finally overspreading the entire camp, it proved more fatal to the different divisions of the army, than could the shot of the enemy in a well contested field. In twelve days, nearly nine thousand men were destroyed. In this emergency, it was fortunately determined by the commander-in-chief to try the effects of a change of location. The centre division accordingly moved in a southeasterly direction, taking up its station on the high grounds at Erich. In a short period, the Marquis was enabled to transmit a despatch

to government, intimating that, having marched fifty miles, he had at last fixed upon a dry and elevated soil, where the pestilence rapidly declined.

Cochin-China and Tonquin were visited by the cholera in 1820. In December of this year it entered China, beginning its ravages at Canton. Pekin admitted the enemy in 1821, and during that and the following year the mortality occasioned by it was so extensive, that coffins and other funeral requisites were necessarily furnished at the expense of the public treasury, for the interment of the poorer classes. Numbers of people, engaged in the pursuits of business or pleasure, riding or walking, were seen to fall down in the streets, exhausted by the sudden impression of the disease, which consigned them in a few hours to their graves. In many instances, the disease caused instantaneous death. Mr Gordon relates many cases of this kind. At Bellary, in India, a tailor was attacked by the cholera and instantly expired, with his work in his hands, and in the very attitude in which he was sitting.

The rapidity with which the progress of the Indian cholera was marked, may be judged of, from the following statements. In less than a month it spread from Jessore to Calcutta, a distance of nearly 100 miles. From Jessore it reached Bombay, a distance of about 1100 miles in twelve months, travelling at the rate of about three miles per day! It went from Allahabad to Etawah, at the rate of five miles a day; from Etawah to Agra, at the rate of about two miles. In its course across the Deccan, it advanced, in many instances, at the rate of from fifteen to eighteen miles a day. The pestilence did not spread itself at once over a large extent of country, but attacked different places in succession, travelling, as it were, by a chain of posts, and attacking a second district or town, after it had ravaged and often ceased, in a first.

In the above rapid sketch we have traced the progress of the cholera from its origin in 1817 at Jessore, until its entrance into Astrakan in September 1823. In the latter city its progress appears to have been arrested on the approach of winter in the month of November. Subsequently to the year 1823, the disease pursued its destructive career through China and various parts of India, and towards the close of 1826, after desolating several cities in Mongolia, it reached the frontiers of Siberia. Its further progress in this direction was, however, checked, for a time, by the prevalence of a strong north wind during the ensuing month of February. In Per-

sia, the disease reappeared several times; visiting in October 1829 the city of Teheran, which is the residence of the royal family: with the setting in of cold weather, as had previously been the case, its ravages were here also suspended.

Towards the middle of June 1830, the cholera again broke out in the provinces of Mazanderan and Shirvan, upon the southern shore of the Caspian sea. From thence it passed through the town of Tauris, destroying five thousand of the inhabitants. Crossing the Russian frontier it rapidly advanced towards the interior. In two provinces 4557 persons were seized with the malady, of whom more than a third perished.

On the 8th of August 1830 the cholera entered Tiflis, the population of which was soon diminished from thirty to eight thousand, by death and migration to avoid the disease. On the 20th of July of this year the epidemic had again reached Astrakan. Ten days subsequently 1229 individuals had been attacked, of whom more than a third perished, including the civil governor, and nearly all the officers of the police. The course of the disease was no longer arrested by the approach of winter: in the month of August of the preceding year it first manifested itself in Orenburg, the capital of the Russian province of the same name, and attained its utmost malignity in different parts of the province during December and January, when the cold is the most intense. In the city of Orenburg, with a population of about 11,000, the whole number of persons attacked was 1100, of whom 200 died. In this city and its suburbs the disease had disappeared entirely on the 20th of November, and on the 23d of February 1830, it was extinct throughout the province; in the whole of which it affected 3590 individuals, of whom 865, or nearly a fourth, perished. In February 1830 the epidemic visited also the village of Massina: the number of sufferers here amounted to 3590, of whom 865 died. In many districts it prevailed with unabated vigour when the temperature was far under zero of Fahrenheit's scale, and in some districts it actually made its first appearance when the thermometer was as low as —29°.

In penetrating into the heart of the Russian empire, from Astrakan, the cholera pursued the course of the Volga, which spreads its navigable waters over the most populous provinces.

At Nischnei-Novogorod, a city about 260 miles northeast of Moscow, the disease made its appearance about the end of August 1830. By the 19th of October 1863 persons had been affected by it, of

whom 968 died. On the 6th of September it manifested itself at Yaroslaff, high up on the Volga.

At Moscow the cholera made its appearance between the 24th and 27th of September in a number of sporadic cases; it increased, however, with great rapidity, so that by the 26th of November the number attacked by it was 1066, and on that day 244 more cases were added to the list. On the 17th of November, according to the official statements, the total number affected with the disease up to that date was 6531, of whom 3508 perished. The labouring classes had been mostly removed to their villages, and many of the nobility left the city entirely, so that the population, which is estimated at 250,000, was considerably reduced. According to Dr Loder, physician to the emperor of Russia, the entire number of cases which had occurred in Moscow, up to February of the present year, was 8130; of these 4385 terminated fatally. By the 1st of January 1831 the disease had greatly declined in the capital, while it still continued to prevail among the troops destined to the reduction of Poland, and over various extensive provinces of the empire.

On the 10th of April 1831 the disease showed itself amongst the wounded and prisoners who, after the battle at Iganie, were conducted to Praga, a suburb of Warsaw, separated from the city by the Vistula. The same day it appeared in the Polish army, and on the 14th it was prevalent in the capital. At Dantzic, in Prussia, the disease manifested itself in May, and on the 25th of the same month at Riga. The total number of cases in the latter city, up to the 23d of June, was 3200, of which 1480 terminated in death. In Dantzic 288 deaths occurred up to the 25th of June, of whom only fifty-three were females. At Liebau, which is one of the most northernmost points to which the cholera has extended, the disease made its appearance in May 1831 and ceased by the 18th of June. By the 26th of June the epidemic had spread to St Petersburg, between which time and the 11th of July 3076 individuals were attacked, of whom 1311 died. By the 1st of July it was at Cronstadt and Archangel; in the latter place out of 1200 cases of the disease there occurred 800 deaths.

In the above sketch we have merely indicated some of the more prominent points to which the disease has advanced in its progress over the north of Europe; the principal towns and villages from Dantzic to Odessa and from Odessa to the White Sea, have in fact

experienced, more or less, its ravages. What may be the extent or direction of its future course, time alone can determine. An advance of but eight hundred miles more in the direction it has hitherto pursued, would bring it very nearly to the gates of Paris.*

In its progress through Russia and Poland the disease has travelled with the same rapidity it exhibited in the east; its ordinary rate being six, seven, eight and ten miles per diem. From Reschd in the Persian province of Ghilan, to Tiflis, the capital of Georgia, a distance of 400 miles, it passed in two months. Its passage from Baku, along the Caspian Sea, to Astrachan, a distance of 350 miles, occupied but nineteen days, and from Nischnei-Novogorod to Moscow, a distance of 260 miles, it spread in less than thirty days.

Of the *symptoms* of the cholera as it occurred in the north of Europe, our readers will be able to judge from the following very interesting summary transmitted to the English government by Sir William Crichton, physician to the Russian emperor at St Petersburg.

"The disease was marked by general uneasiness,—violent headach and giddiness,—great languor—oppression in the chest,—pain at the pit of the stomach and sides,—a very weak pulse and frequent vomiting, first of undigested food, and then of a watery fluid mixed with phlegm,—frequent purging,—severe pains,—cessation or very scanty secretion of urine,—excessive thirst,—cramps in the legs, beginning at the toes, and by degrees reaching the body,—voice feeble and hoarse,—eyes dull and sunk in the head,—the features changed and like those of a corpse,—coldness, contraction, and bluish tinge of the extremities,—coldness over the whole body, the lips and tongue becoming blue,—cold and clammy perspiration.† The vomiting and purging soon exhaust the patient,—the spasms become greater, attacking the most vital parts,—the pulse ceases,—the beating of the heart becomes scarcely sensible,—and the patient, after suffering the most horrid martyrdom, dies quietly, having a few moments of ease just before his end. The duration of the malady is generally from twenty-four to twenty-eight hours, but sometimes its course is still more rapid."

* For the foregoing condensed history of the progress of the epidemic we are in a great measure indebted to two essays which appeared in the Journal of Health, vol. iii. pp. 16 and 21. From an article in the same work we have borrowed freely also in our account of the causes of the disease. In both instances, to insure correctness, the original documents have been carefully consulted.

† According to Dr Keir of Moscow, the thermometer placed under the tongue, during two minutes, sunk, in one case of cholera, to 77 degrees, and in another to 88 degrees of Fahrenheit.

The detail of symptoms presented in the circular distributed by the Austrian government, indeed all the accounts which have been published, agree with the above. The elaborate epitome of the disease transmitted by Dr Keir, of Moscow, to the British government, coincides with it, as also do the symptoms of a case detailed by Dr Sokolov, of Orenburg, in the work of professor Lichtenstædt. It is needless to dwell on this topic, with the view of proving the identity of the symptoms with those remarked by English practitioners in the cholera of the East Indies. All the Russian reports unite in showing that in the generality of cases there were the same excessive evacuations upwards and downwards of a watery, turbid fluid, the same collapse of the skin, coldness of the surface, sinking of the pulse, failure of the strength, lividity of the face, spasms of the muscles, sense of pain, or pressure in the region of the splanchnic plexus of nerves, extreme despondency, entireness of the mental faculties, and blackness and inspissation of the venous blood; that in Russia as in India some instances occurred of rapid death, with collapse and spasms, and without vomiting or purging; that in other instances chronic irritation of the bowels continued for a long time after the violence of the disease was broken; and that sometimes, too, symptoms of cerebral congestion supervened on the violent constitutional disorder which accompanied the intestinal symptoms, and quickly terminated in coma and death, when not properly counteracted.*

Little has been added by the physicians of Russia to our knowledge of the pathological anatomy of cholera, beyond that for which we are indebted to the investigations of the English surgeons in India. The descriptions of the morbid appearances in the bodies of those who have died of the disease, presented by the former, though few in number and imperfect in details, coincide very nearly with those met with in the autopsical examinations of the latter. The following, according to Dr Keir, are the appearances after death, observed at Moscow.

"The extremities in general were more or less livid and contracted, and the skin of the hands and feet corrugated; the features shrunk and ghastly. On opening the scull, the blood vessels of the brain and its membranes were more or less tinged with blood, particularly towards the base. The arachnoidea had sometimes in several places lost its transparency, and adhered to the pia mater. A fluid was sometimes found effused into the convolutions of the

* See Ed. Med. and Surg. Journal, Vol. XXXVI. page 123.

brain in some quantity, and more or less serum in the lateral ventricles. The blood vessels of the vertebral column and spinal chord were more or less loaded with blood, which was sometimes effused between its arachnoid and dura mater; partial softening of the substance of the spinal chord was sometimes met with, and marks of inflammatory congestion in the larger nerves. The lungs were generally gorged with dark coloured blood; the cavities of the heart were filled with the same, and frequently contained polypous concretions. In all the dissections I was present at, very dark coloured blood, which, when extended on a white surface, resembled the colour of the darkest cherry, was found in the arch of the aorta, and in other arteries. The state of the abdominal organs varied considerably; the stomach, and different parts of the intestines were frequently found to be partially but considerably contracted; the internal surface of the stomach sometimes seemed to be little affected; a whitish or yellow fluid matter, resembling the evacuations, was frequently found in different parts of the alimentary canal, which, now and then, contained a good deal of air; in other cases both stomach and intestines bore marks of congestion, and a sub-inflammatory state, varying from dark coloured spots of small extent to several inches, affecting the whole internal circumference: the colour of these parts also varied a good deal from dark coloured venous congestion to light rose coloured inflammation. In one case, the internal surface of the stomach was so strongly and so generally tinged of a very dark colour, that it might easily have been mistaken for gangrene. On exposing the stomach between the eye and the light, it was evident that there was neither gangrene nor solution of continuity, but that the dark colour proceeded from a very general and great congestion of very dark coloured blood in the vessels of the organ. The subject of this case, I was told, had died with symptoms of a typhoid nature, after suffering from the usual symptoms of the epidemic. Excepting in this case, which was evidently one of congestion and not of inflammation, I saw nothing in the morbid appearances from which a conclusion could be drawn that inflammation was a very general morbid change in the alimentary canal, or a common cause of death, however by its presence in the second period of the disease it might add to the general irritation, or even, as a consequence of preceding congestion, be itself, occasionally, the cause of the fatal event. Both stomach and bowels were frequently of a paler colour than natural, both on the outer and inner surface; but neither thickening nor condensation from inflammation, nor exulceration, destruction of substance, nor abscess, appeared in any of the dissections at which I was present. The liver was generally pretty full of dark coloured blood; the gall bladder frequently much distended with tenacious, ropy bile, of a dark yellow or green colour; the gall ducts were sometimes contracted, at other times not; the appearance of the pancreas, spleen, and kidneys, was various,

frequently differing little from their natural state, and in other cases, rather surcharged with blood; the urinary bladder almost always collapsed and empty; the uterus generally healthy."

To enable the reader to judge of the identity of the Russian cholera with that of India, we subjoin the following account of the morbid appearances after death in the latter, condensed from the very able report drawn up by Mr Scott for the Madras Medical Board; a document which few in this country have had an opportunity of consulting.

The external appearance of European subjects, who have died of cholera, closely resembles that which they exhibited whilst labouring under the disease. The surface is livid, the solids shrunk, the skin of the hands and feet corrugated. There exists no uncommon tendency in the body to putrefaction, nor any characteristic fetor from the abdominal cavity. The cavities of the body lined with serous membranes, as well as these membranes themselves, presented no particular morbid appearances. The cavities indicated have almost uniformly been found in a natural state, or the deviations from that state have manifestly had no connexion with cholera. The surfaces, which are lined or covered with mucous membranes, on the contrary, very generally exhibited signs of disease.

The lungs have not unfrequently been found in a natural state, even in cases where much oppression of respiration had existed previously to death. Much more generally, however, they were found either to be gorged with dark blood, so that they have lost their characteristic appearance, assuming more that of liver or spleen; or they were in an opposite condition,—that is, collapsed into an extremely small bulk, and lying in the hollow on each side the spine, leaving the cavity of the thorax nearly empty. This has been supposed to have arisen from the extrication of a gas, but on piercing the thorax of the dead body under water, no gas escaped. The blood found in the lungs has been always very black. The heart and its larger vessels were found to be distended with blood, but not so generally as the apparent feebleness of their propelling power, and the evident retreat of the blood to the centre, would have led us to expect. The engorgement of the right cavities of the heart with blood is not peculiar to cholera, but in some cases the left cavities were found filled even with dark or black blood, which we may consider a morbid appearance more peculiar to this disease.

In the abdominal cavity, the peritoneal coverings of the viscera

presented seldom any morbid appearances; the morbid accumulation of blood in the vessels of the viscera, imparting to them, however, an appearance of turgidity and blueness, occasionally evident on their exterior surface. Where the patient has lingered long before death, this membrane occasionally exhibits traces of inflammation. In other cases the whole intestinal tube exhibited a blanched appearance both externally and internally. The stomach and intestines generally preserved their ordinary size. The omentum was not sensibly affected. So various were the morbid changes in the stomach, that upon them no pathological conclusions could be founded. The organ was rarely found empty or much contracted, nor was any appearance of spasmodic stricture of the pylorus often detected. It did, however, sometimes occur. The contents of the stomach appeared to be chiefly the ingesta in an altered state; in some cases a greenish, yellow, or turbid matter was found. Various appearances, either of active inflammation, or a congested state of the vessels, were noticed, sometimes in one part, and sometimes in another, of the organ. The parts seemed as if they were sphacelated, thickened, softened, and friable,—and, in short, exhibited so great a variety of appearances, from a perfectly natural state to the most morbid condition, that no particular light is shed by them on the nature of the disease.

The intestinal tube was sometimes collapsed, but oftener more or less filled with gas; distended in some parts in bags, or pouches, containing whitish, turbid, dark, or green coloured fluid; and in others presenting the appearance of spastic constriction. The latter, however, was not common. The intestines contained no fecal or other solid matters, but very commonly large quantities of a *conjee* looking fluid, or of turbid, serous matter. The duodenum, and occasionally the jejunum, were found loaded with an adherent whitish or greenish mucus,—at other times they were found, as it were, denuded of their natural mucus, and often they were perfectly healthy. Traces of bile in the intestines, or of any substances apparently descended from the stomach, were exceedingly rare. Sanguineous congestion, and even active inflammation, are stated to have been more common in the bowels than in the stomach; but on the other hand instances were very numerous where no such indications were detected. The thoracic duct is stated to have been found empty of chyle. The liver was commonly gorged with blood, but not always; the gall bladder was almost universally

found to contain bile, and in the great majority of cases even completely filled with it. As is usual with this secretion in cases of retention, it was of a dark colour. Very different states of the gall ducts have been described: cases of constriction and impermeability seeming to be equally numerous with those of an opposite character. The urinary bladder was found, we may say universally, without urine, and very much contracted. The mucous membrane of the bladder and uterus have been found coated with a whitish mucous fluid. In the spleen nothing unusual was detected. The vessels of the mesentery were very generally found to be loaded with blood.

In the head, appearances of congestion, and even of extravasation, were frequently observed; but not so uniformly, nor to such an extent, as to require any particular notice. Only one case has been given, where the state of the spinal marrow was examined; and in that, indications of great inflammation were detected in its sheath; the case, however, was in some degree a mixed one.

An all important question in relation to the disease under consideration, is to what cause or set of causes are we to refer its production? When we consider the extensive and rapid spread of the cholera, independent in many instances of the direction of the wind; its prevalence in climates the most dissimilar from each other, whether from dryness or moisture, heat or cold; at every season of the year, and amid every variety of weather: it is evident that the ordinary causes of disease, whatever influence they may exert upon its progress and malignity, afford us no satisfactory explanation of its origin.* The production of wide spreading epidemics of every species is, in truth, a problem difficult, if not incapable of solution. To some peculiar morbid condition of the atmosphere they are doubtless all to be referred—the exact nature of which, however, has heretofore, and possibly ever will, escape our strictest scrutiny.

That the production of cholera, at least, is referrible to some morbid property residing in the air we breathe, is rendered almost certain, by the peculiar character of the disease. In no other

* "Elevation above the plane where the cholera prevailed (in Russia) did not constitute any protection. In the East Indies it was, we believe, invariably observed, that cholera did not proceed up the mountains. In the government of Orenburg, on the other hand, instances occurred of villages being attacked, though situated at a height of one thousand four hundred feet above the surrounding plain."—*Hawkins, p.* 114.

manner can we explain its sudden appearance in the midst of an extensive population, the greater part of which become at once its subjects. In Mr Jameson's Bengal report, it is stated, that two million persons had assembled to celebrate a religious festival on the shores of the Ganges; the cholera suddenly broke out amongst them, while at their devotions, and in eight days destroyed twenty thousand persons! The pestilence was stayed, however, so soon as the multitude dispersed; it did not extend even to a village only seven miles distant. In one week the greater part of the troops under the command of the Marquis of Hastings were attacked with the disease, and in twelve days nearly nine thousand individuals fell victims to it. In Bassora, the number of persons attacked by the cholera, almost simultaneously, may be judged of from the fact, that in fourteen days the deaths in that city amounted to fourteen thousand. At St Petersburgh, in Russia, the disease appeared on the 26th of June, and in the fifteen days between that and the 11th of July, at least 3076 of the inhabitants were attacked.

Some of the phenomena, remarks an intelligent writer, observed in the cholera of the east, seem to indicate that the causes operated as a poisonous cloud (if we may suppose such a thing) would have done. The poisonous effect has often been as sudden as we can conceive. Men in perfect health arrive at a certain spot, and fall down by dozens; some never to rise again, and others to escape barely with life, after excessive pain and torture. Cases are also related of large bodies of men entering in such a stratum of poisonous air, as at Nagpoor, for instance, and also, the troops which suffered so terribly on a march from Ganjam through the northern Circars. In other cases, the pestilential cloud seems to have been wafted into the midst of a stationary assemblage, as the camp of the Marquis of Hastings, on the banks of the Sinde; the disease, in this latter instance, rapidly abated after the removal of the encampment from the infected district to the high grounds at Erich.

In evidence of the fact that the cause of cholera was often of such an extent as to be explicable only upon the supposition that it was connected with a morbid constitution of the atmosphere, the statement of Dr Onufriev, physician for the circle of Orenburg, may be cited. "During the prevalence of the epidemic," he observes, "there was *scarcely a single inhabitant* of the city of Orenburg, who had not some symptoms of disordered digestion. One complained of oppression and pain in the breast; another of pain in the

head, some nausea, diarrhœa, and the like. To me it appears that the cause of these symptoms was a general invasion of the systems of the inhabitants by cholera, which, however, was prevented from developing itself in its perfect form, by a regular manner of living, and other similar means. This may be considered as proved by the *almost universal* prevalence of symptoms of disturbed digestion, their originating without any appreciable cause, especially in persons newly arrived in the city, and their being removed by the usual treatment."*

The cessation of the cholera, was equally sudden with its invasion. This was particularly the case in India, where after prevailing for a time in one place, the disease, as it were, ceased at once its ravages, to make as rapid an attack in another, and often distant quarter. It very rarely remained in much vigour at any one place for more than fifteen or twenty days, and sometimes was exhausted in a much shorter time. Armies have fled from the track of the pestilence, and been safe, out of the limits of that track.

The intemperies of the atmosphere, whatever it may be, to which we have referred the production of cholera, does not appear to depend upon any poisonous exhalation, derived either from the soil, or from the bodies of the sick. This is evident, as well from the wide spread of the disease, its not extending itself from a centre to a circumference, nor following the course of the wind or the sun, nor obeying any other meteorological phenomenon: frequently, indeed, it has been known to pursue its course in the very teeth of the most powerful monsoons. Contagion and miasms, floating in the air, seldom extend more than a few feet beyond the spot from which they derived their source; when wafted to a greater distance, it is always in the direction of the prevailing winds. However much we might be inclined to ascribe the state of the atmosphere producing cholera, to the evolution of terrestial miasms within the tropics, no such miasms can be supposed to have existed during the intense cold of a Siberian winter, and yet, as we have seen, the disease prevailed in Russia in defiance of intense frost. In many places, too, as at Orenburg, which were subjected to the ravages of the cholera, no extensive sources for the production of miasms were present, even if we should suppose a sufficient degree of heat existed to engender them.†

* Lichtenstædt, p. 90.

† Mr Orton has assigned a change in the *electricity of the atmosphere* as the

Whatever, nevertheless, has a tendency to vitiate the atmosphere of any given neighbourhood, would appear evidently to invite the disease, and to increase the number of its victims. Thus the cholera has prevailed most generally, and to the greatest extent, in the thickly populated cities of the east, where cleanliness and ventilation are but little attended to; and even in these cities, its principal ravages were among the poorer and more debased of the people. A similar statement may be made in reference to the progress of the disease through the north of Europe.

"Every where in Europe," says Hawkins, and in the statement he is fully borne out by the official documents collected by Professor Lichtenstædt, "every where in Europe the lower orders have been the chief sufferers: the number of remarkable persons and of nobility, who have fallen victims, has been extremely small; their names, indeed, might be easily enumerated. When such instances have occurred among the affluent classes, they might probably be explained by particular mental anxiety, or a state of predisposing bad health," or, he might have added, to intemperance, as in the case of Marshal Diebitsch, whose attack, it is stated on good authority, was evidently attributable to this cause. "The soldiers of the conflicting armies in Poland have been amongst the chief sufferers; we may easily imagine the privations to which they have been exposed. At Warsaw, the Committee of Health announced, that very few persons of easy condition have been attacked, and that the disease has expended its chief ravages on the poorer inhabitants of the low and thickly peopled quarter of the city near the Vistula. At Riga, the sailors appear to have been most liable to the disorder."

It is stated on good authority, that during the recent prevalence of the cholera in Calcutta, the dead bodies of the poor were cast into the river Hoogly, while, in addition to this source of noxious exhalations, the streets were in so filthy a condition, that the adjutant crane and jackall, crows, and kites, were permitted to enter the city in vast numbers, to act as scavengers.*

A physician of eminence,† and member of the council to whom the investigation of the nature of the disease, as it occurred in Moscow, was especially entrusted, states that the intensity of the disease

immediate cause of cholera; he has, also, insisted strongly on *Sol-lunar influence*, in connexion with electricity.

* See Letter of Mr Harvey, Christian Observer.

† Dr Jœhnichin.

was in direct ratio to the dampness of the atmosphere; the epidemic prevailing chiefly among the lower classes, who resided in moist and low situations.* It is notorious, also, that inattention to cleanliness is a characteristic of these very classes. A somewhat similar statement is also made by Dr Rankeen, who attributes the occurrence of the cholera in Bengal, to the conjoint operation of sudden changes of weather, humid soil, and a damp atmosphere, in connexion, more especially, with a diet of rice or other grain, vitiated by the wetness of the season.†

Mr Cormick, an East India surgeon, speaking of the cholera as it appeared at Tabriz, a town in Persia, says, that the disease first began in that part of the city which is most low, filthy, and crowded with poor inhabitants; and advanced from quarter to quarter of it, finishing its ravages in one before it commenced them in another. It was most destructive in the houses which were low, and possessed most inhabitants.

It is said that, four days previous to the occurrence of the cholera at Riga, upwards of fifty cart loads of filthy rags, and almost putrid garments, the clothing of those who had died in the Russian camp, many of them of the very disease in question, were brought into the city, and deposited, with all the filth with which they were imbued, in the public stores.

In proof of the agency of an impure atmosphere in favouring the spread of cholera, it is stated that in Tripoli, a city in Syria which is well ventilated, only thirty-one persons were attacked, out of a popu-

* This fact is also distinctly stated, in the official instructions issued by the Austrian government, for the purpose of repelling the approach of the cholera. Dr Darbal also, in his Report to the Academy of Sciences at Paris, states that "the epidemic chiefly raged among the lower classes, in low, damp, and filthy dwellings."

† Dr Tytler also maintains the agency of a deleterious article of food, viz. damaged rice, as the exciting cause of cholera. The agency of improper and indigestible articles of diet, in the production of the disease, is pointed out in the instructions issued by the Russian and Austrian governments; in these, the articles enumerated are, unripe and watery fruits, beer, hydromel, sour soups, mushrooms, cucumbers and melons, salted and spoiled fish, and greasy food generally. The sale of cucumbers and water melons, which were peculiarly abundant in the fall of 1829, was prohibited by the local magistrates of Orenburg, as well as their introduction into the surrounding country. Dr Walker, of St Petersburgh, in his Report to the British Government, observes, that in Austrian Gallicia, he was informed, "a better diet furnished to the lower orders, at the expense of government, appeared to have contributed, as much as any other measure, to prevent the spreading of the disease."

lation of fifteen thousand. In Russia, also, according to the statements of Dr Reimann of St Petersburgh, the disease was more or less rapid and more or less extensive in its spread, according to the more or less wholesome nature of localities; it has thus been very prevalent and fatal among the Jewish population, who live shut up in small apartments, and in extreme filth.

But notwithstanding the remote causes of cholera are, in all probability, connected with a particular constitution, and a vitiated condition of the atmosphere, yet a certain state of the human system, or predisposition to disease, would appear to favour its production. When it made its appearance in a city, all the inhabitants were not equally liable to its attacks, many entirely escaping, notwithstanding their full exposure to its remote causes. It was among the lower classes of the people, the ill fed, ill clothed, those living in low damp houses, huts or cellars, and those, especially, given up to habits of intemperance, and careless of health, who were the first and by far the most numerous victims of the disease. The temperate and prudent most generally escaped, or suffered but a slight attack. To this fact, nearly all the physicians who have had an opportunity of studying the disease, bear testimony. Dr Jœhnichin of Moscow declares that drunkenness, debauchery, bad food, and personal indiscretions, were incontestably its predisposing causes. Dr Rieche informs us, that in China, the disease selected its victims from among such of the people as live in filth and intemperance.* Dr Darbal, a French physician resident at Moscow, who, with Dr Jœhnichin, imagines that the emanations or atmosphere of the sick form a focus of infection, admits, nevertheless, that this atmosphere is dangerous to those only who are predisposed to disease through poverty, misery, drunkenness, debauchery, indigestion, and the effects of cold. A physician of Warsaw states, that the disease spared all those who led regular lives, and resided in healthy situations; whereas they whose constitutions had been broken down by excess and dissipation, were invariably attacked. Out of 100 individuals destroyed by the cholera, it was proved that 90 had been addicted to the abuse of spirituous liquors. The females, who are rarely given to the use of these liquors, very generally escaped.†

* Mittheilungen über die morgenlandische Breckruhr, 1er Band. Stutgart, 1831.

† In India, females and children were likewise observed to be less liable to the cholera.

The agency of intemperance in predisposing to, and exciting the disease, is shown by the fact, that after the decline of the epidemic at Riga, the occurrence of the Whitsun holidays caused a temporary augmentation of new cases, from the indulgence in intoxicating drinks and other irregularities, incidental to a popular festival.

In India, it was observed that the cholera was more or less prone to occur in individuals, in proportion to their greater or less exposure to nocturnal cold and damp, to great and sudden variations of temperature and to *fatigue*. This is proved, by the fact that in the army the disease attacked especially bodies of troops during or immediately subsequent to their march from one station to another, when they are necessarily exposed to all the causes enumerated.

Of the European officers who fell victims to the epidemic, all, or nearly all, were attacked during a march from station to station. The camp followers, as they are left to shift for themselves, no tents being provided for them, and having seldom the means of protecting themselves by warm clothing from the chills of the night, suffered most of all, next the Seapoys or soldiers, and, last of all, the officers. The almost entire exemption of the *civil* servants of the East India Company from the epidemic is worthy of notice: they are generally resident for several years at the same station, and when they travel, do so without being exposed to the fatigue or discomfort to which the military are subject. Their intercourse with the natives is much greater, however, than that of the rest of the European part of the community.*

The experience of all ages has, in fact, shown that they are the least liable to the attack of epidemic diseases of every variety, who are careful to preserve the resisting powers of their systems in their greatest possible vigour by good wholesome food, the avoidance of fatigue and of exposure to cold and dampness, regular exercise, temperance in all things, a cheerful temper and undaunted spirit. On the other hand, there is no surer way of inviting an attack, than to be calculating the chances of it, and searching after the reputed means of preservation; to brood over its terrors, or watch its approach with anxious and incessant solicitude. To attempt to drown these fears by stimulants or narcotics of any kind; to weaken the system by starvation, or derange it by repletion; are equally subversive of the end for which they are resorted to.

A question of no little importance in reference to the cholera

* Report of the 89th Regiment at Quilon in Travancore.

still remains to be considered; namely, whether it is capable of being communicated by contagion. That it may originate independently of a specific virus emanating from the bodies of the sick, is admitted on all hands; but the question as to the possibility of its propagation in this manner, after it has once appeared in the midst of a population, is still a subject of dispute. The principal facts bearing upon this point we shall proceed briefly to review.

It is well known, that by far the greater number and the best informed of the British medical officers in India, who have witnessed the epidemic, have recorded their decided opinion, that the disease was in no instance contagious or infectious. The facts upon which this opinion is founded they very fully detail. This of itself would lead to a strong presumption that the cholera, after its passage into Europe, preserved a similar character. We find, however, that on this point considerable diversity of opinion prevails. Many deny the contagiousness of the disease *in toto*, while another class would seem to admit that it possessed this property, at least to a certain extent. Some of the Russian physicians who at first denied that it was capable of being propagated by contagion, subsequently admitted it, and an equal number who had believed at first in its contagious character now strenuously support the opposite opinion. The truth is, the facts upon which alone the question of contagion can be settled, have been entirely overlooked, or else investigated imperfectly, by the physicians of northern Europe, and in consequence, their opinions as to the exact character of the disease in this respect sit but loosely upon them, being changed in many instances according as the facts that have fallen under their notice would appear to support one or other side of the question, without any attempt to examine such facts in all their bearings. With a few exceptions our professional brethren of Russia would appear to have studied but little the rules of medical logic.

In evidence of the contagiousness of the cholera, it has been asserted, that strict seclusion on the part of the inhabitants of a city or of any other community, even the members of a single family, will effectually prevent the occurrence of the disease amongst them. A few curious instances of this kind have, we admit, been noticed both in the East Indies and in the north of Europe: but before any positive inference can be drawn from this fact, certain particulars of which we are not informed must be inquired into; namely, whether the circumstances of the individuals thus secluded, especially their

habits as it regards temperance in eating and drinking, and cleanliness both personal and domestic, were not such precisely as constitute in a great degree a safeguard against the disease. There is no absolute certainty, also, that these very communities by whom a system of seclusion was resorted to, would have been visited by the disease even had no precautions been taken to avoid it. In its progress, as well in India as in Russia, the cholera has exhibited many strange caprices, often passing over at first places lying directly in its route, and perfectly open to its attack, but, after some time, retracing, as it were, its steps, it has prevailed in these very places, without extending to the others in their immediate neighbourhood. In a city it has been known to avoid, so to speak, a particular street or block of buildings, while all around experienced its ravages. At the Russian village of Tschernoretschinsk the disease made its appearance on the 19th of January, after having passed by this place four months previously in its progress to the west. In all the towns and villages within a moderate distance, except one, the disease had entirely disappeared before the end of November preceding, while at the only village where it continued longer, at a distance of twenty miles, it had ceased by the 8th of December, more than five weeks previously. From all the circumstances connected with the occurrence of the cholera in this village, so long after it had ceased in the neighbouring country, there is not the slightest reason for suspecting that it was introduced by communication with infected individuals; and as to communication with infected goods, from the commencement of the disease in the Orenburg government, no one was able, in any instance, to trace it to this source.*

So many instances have occurred of entire exemption from the disease of an extensive population, whose full exposure to the supposed contagion cannot be called in question, and, on the other hand, so many examples of the strictest quarantine being ineffectual in preventing the entrance and spread of the disease, that the occasional immunity of certain secluded districts and individuals, cannot with any propriety be adduced as certain evidence of the contagious nature of the cholera; their escape from it had evidently very little connexion with the mere circumstance of their being shut up from intercourse with the sick. The governor of the Isle of Bourbon, when informed of the occurrence of the epidemic in the neighbouring island,

* Lichtenstædt, p. 125.

Mauritius, took immediately every precaution to cut off the communication, but, in defiance of the most rigorous quarantine, the disease made its appearance amongst the inhabitants of the isle.* At Orenburg, also, the disease made its appearance, notwithstanding the enforcement of a fourteen days quarantine. It has been said, we are aware, in reference to this latter fact, that the period of fourteen days was insufficient for the development of the disease in those who had been exposed to the contagion, an assertion more easily made than proved. All the facts hitherto collected in favour of the contagious nature of cholera show, evidently, that if contagious at all, the period during which the contagion remains latent in the body is very short; seldom, if ever, could it exceed a few days. In all the cases where the disease occurred soon after the sickening of persons recently arrived from an infected district, it appeared among the residents in less than a week.

In proof of the inefficacy of seclusion from intercourse with the sick in preventing the occurrence of cholera, a fact stated by Dr Cormick may be cited. During the prevalence of the epidemic at Tabriz, a city in Persia, 10,000 or 12,000 of the royal troops passed the city. They were prevented by guards stationed at the gates from entering it, but several of them passed the day under the walls. During the next day, however, the disease manifested itself among them, and they suffered from it very severely. The occurrence of the disease in this case can be readily accounted for upon the supposition of an aërial cause, but not upon that of contagion.

The strictly epidemic character of the cholera is evinced in its occurrence on board of ships at sea, that had not touched at any place where it was prevalent. Troops, also, were attacked on a march through an open country,† and officers in their boats on the Ganges, far from any source of contagion.

* Dr Kinnis's Report, Hawkins, 265. The contagionists assert that the disease was introduced into this island by the clandestine disembarkment of some negro slaves. Upon what authority this fact is predicated, we know not.

† A striking instance of this kind is related in the report of the eighty-ninth regiment at Quilon. The first battalion, fifth regiment of the native infantry, of about 1000 strong, marched from Quilon for Bangalore. The families of the Seapoys and camp followers of every description amounted to about 4000, making, in all, a body of 5000. The cholera had disappeared at Quilon some considerable time before the march of these troops, and no case of it had occurred among them for a much longer period. On the morning they left the city one Seapoy was attacked, and two or three more daily for the following ten or twelve

Mr Cormick notices a curious fact, which goes far to disprove the idea of the disease being propagated by the mere admission into a place of those labouring under it. The persons composing the family of the Persian prince quitted the city of Tabriz after the violence of the epidemic had already begun to abate. They, however, carried the cholera along with them, and continued to be attacked from four to six a day, for about ten days, but *not a single person of the villages through which they passed, or where they slept, took the disease.* We find, also, that the dispersion of collected masses of people, a large part of whom were labouring under the disease, as in the case of the religious assemblage on the banks of the Ganges, or their removal to a dry, elevated, and more healthy situation, as in the instance of the Marquis Hasting's army, so far from spreading the disease, by forming so many foci of contagion, was sufficient to prevent its further spread even among themselves.

During the epidemic, Dr Albers informs us,* it is certain that about 40,000 inhabitants quitted Moscow, of whom a large number never performed quarantine; and notwithstanding this fact, *no case is on record of the cholera being transferred from Moscow to other places;* and it is equally certain, that in *no situation* appointed for quarantine *has any case of the disease occurred.*

The introduction of the cholera from a foreign source, though boldly asserted in reference to several of the Indian and Russian provinces, by the advocates of contagion, has not in a single instance been satisfactorily proven. On the contrary, all the facts which have been collected are in favour of the opposite opinion. Thus into the Isle of France it is said to have been imported by the Topaze frigate, which arrived from Ceylon on the 29th of October 1829, but it appears from the report of Dr Kinnis, that cases of the disease had occurred in the island on the 5th and 6th of September, although the disease did not prevail extensively until the 18th of November, when it broke out in its most severe form among the

days. By that time, the battalion had reached the mountains through which they were to pass to their destination; the march became now more fatiguing, and they were often exposed to wet in crossing the mountain streams which at that part of the road very frequently intersected the line of march. The epidemic then began to rage in the most appalling manner, and in the short space of eight days cut off no less than 1100, of which number there were no more than 250 Seapoys. None of the European officers were attacked.

* Report to the Prussian government.

African slaves and Indian convicts. A considerable number of sailors belonging to merchant vessels, lying near the shore, died of the disease, whereas not a soul belonging to the Topaze, which lay about a mile and a half from shore, but communicated constantly with it, was attacked after her arrival. But one patient and no hospital attendant was attacked at head quarters. No children, and a very small proportion of women were affected.

At Ceylon, according to Deputy Inspector Farrell's report, it was found that the disease, on appearing at any one place, attacked *almost at the same instant*, a vast number of persons, who, from their habits, modes of life, and separation of their abodes, could not possibly have communicated it to one another. Dr Solomov informs us, that the cholera first appeared on the frontiers of the Astrakan government on the 3d of July, on board a ship of war, which had arrived from Baku (350 miles down the Caspian), and lay sixty miles from Astrakan. Till the 20th of the month the disease was confined within the Sedlitovski lazaretto, whither the vessel with the sick had been brought. But on that day four people were taken ill in the city; subsequently the disease spread over the whole town and destroyed a great number of the inhabitants.* It can scarcely be supposed that the crew of the man of war alluded to contracted the disease at Baku†, while we are presented with no evidence that any intercourse took place between the four individuals simultaneously attacked and the sick at the lazaretto. At Tiflis, the capital of Georgia, where the cholera appeared a short time subsequently to its visit to Astrakan, "the most convincing evidence," says the Report of the Commission of Health, "was received of its not being contagious."

The introduction of the cholera into the Russian province of Orenburg, Moreau de Jonnès has endeavoured to prove was by the caravans which arrive there annually from Kiachta or Boukara, and which are composed of from three to four thousand camels, and as many men. These caravans transport across the steppes of Boukara the merchandize of China, Thibet, Caboul, and Indostan, countries which have been above twelve times the prey of this pestilence. The strictest investigation that could be made, on the part of the Russian physicians, shows the little probability which is attached to such an opinion. From the report of Dr Sokolov we

* Lichtenstædt.

† The epidemic did not reach Baku until the beginning of July.

learn that the last caravan which arrived at Orenburg, reached that place on the 22d of July, thirty-five days before the first case of cholera had occurred there; the individuals of which it was composed were all in good health, and in crossing the steppes, which takes from about thirty-three to ninety days, they lost only one companion, of a disease under which he had laboured for twenty days, and certainly, therefore, not cholera. The disease could not, hence, be introduced by any of the persons belonging to the caravan. It is equally certain that its introduction was not owing to the merchandize conveyed by them. At every resting place it is the practice of the merchants to unpack their goods, so that the whole of the caravan must have been freely exposed to the poisonous effluvia, if any existed; nevertheless none were taken ill. The Bukarian merchants, also, to ridicule the suspicions of the Russians, exposed themselves with perfect readiness in every possible way to the exhalations from their bales and packages. Besides, it could not be discovered that any person in Orenburg was attacked by the cholera who had purchased goods of a suspected nature brought by this caravan. When to these facts it is added, that at Orsk and Troitsk, two other frontier towns where the eastern caravans likewise arrived during the summer, cholera did not appear at all, we conceive it is distinctly made out, that importation in this manner was out of the question. The introduction of cholera into Orenburg has, likewise, been ascribed to the Kirghis, who along the whole confines of the province are constantly employed in bartering goods with the people of the latter, during the summer and harvest; but if the Chiwa and Buckarian caravans could not have introduced the disease into Orenburg because actually it was never introduced into Orsk and Troitsk, how was it possible for the Kirghis to introduce it into Orenburg, without, also, introducing it into the numerous stations on the frontiers with which they maintain an equally constant intercourse.*

At Riga it is stated in the official report of the medical board of that city, that "by the most particular inquiries, it does not appear that the disease has been introduced from without into the city; and from the circumstance of the neighbouring governments of Courtland and the borders of the Duna, to the Minsk government, remaining in a healthy state, as likewise that those who were first

* Lichtenstædt, p. 121, et seq.

attacked, have not been strangers, but inhabitants, who lived in parts of the town distant from each other, and in the suburbs, it appears evident that the sickness has shown itself in this place from unknown causes in the air and surface of the earth." A strict investigation, we are informed, was made into what were called the four first cases which occurred in Moscow, and it was proved that the patients had neither themselves been in any infected place, nor had communication with any one coming from such a place.*

Those who maintain the contagious character of cholera assert that persons who reside in the houses or in the immediate neighbourhood of the sick, are those most liable to be attacked, and among whom the disease first spreads; even admitting this to the fullest extent contended for, it does not prove the contagiousness of the disease. We have seen that the epidemic is influenced in its attacks in a very great degree by the situation in life and the habits of individuals or communities, and, also, by the location of their dwellings in damp, ill ventilated, filthy and otherwise unhealthy situations; hence we may readily suppose that the neighbours, companions and inmates of the sick would be those among whom the disease would be most liable to occur, and that even persons of a different class, as medical men and nurses, who were in the habit of merely frequently visiting the dwellings of the sick, would be more exposed to an attack than others. In India the medical officers of the army were the only Europeans in easy circumstances who had occasion to enter the particular districts where the cholera prevailed; hence we find a greater number of them fell victims to the disease than of the European population generally; nevertheless the whole number of physicians who were attacked was in fact but very trifling. We have the most unquestionable evidence that in hospitals, those in attendance upon the sick did very generally escape the disease, which is as strong a proof as could be offered of its non-contagious character. At Nagpoor, says the Bengal report, the medical staff remained for several days, night and day, in the hospitals, and yet all escaped. In the Hospital of the Royals, says the Madras report, only one individual out of 101 attendants was attacked. In the general hospital in India it is stated, upon the authority of assistant surgeon Whyte, that the friends and relations of the sick who by assisting the patients into and out of the bath, and every other way,

* Dr Walker's Report to the British government.

were thereby exposed to be attacked by the disease, whether it be conveyed through the medium of an infected atmosphere or by the touch, in no instance were affected; neither were the dooly bearers nor hospital assistants. In Deputy Inspector Farrell's Report at Columbo in Ceylon we have nearly as strong evidence of the non-contagiousness of the disease: he remarks also that it has been known to attack patients admitted into the hospital for other complaints, and to have carried them off with its usual rapidity, and not to appear again in the same hospital, although it raged in all directions around it. The fact of the disease not spreading among the attendants of the sick is confirmed by the official report of the extraordinary committee of physicians assembled at Moscow, by order of the emperor, who add, that "convalescents have continued to wear clothes which they wore during the disease, even furs, without having been purified, and they have never had a relapse. At the opening of bodies of persons who had died of the cholera, to the minute inspection of which four hours a day for nearly a month were devoted, neither those who attended to these dissections, nor any one of the assisting physicians, nor any of the attendants, caught the disease, although, with the exception of the first day, scarcely any precautions were used." In India an individual has been known to be attacked in the midst of a barrack, and carried off in a few hours, while none of his comrades suffered. As this fact of the immunity of those in immediate attendance upon the sick is in our opinion sufficient to overthrow the opinion of the disease being communicable by contagion, we must be permitted to add the strong testimony of Dr Smirnov, staff physician at Orenburg, as recorded by Professor Lichtenstædt. During two months while the disease prevailed at Orenburg, and 299 patients were admitted into the military hospital, the personal attendants on the sick remained entirely exempt from the disease. They consisted of one hospital assistant, six pupils, as many Baschir lads, and fourteen hospital servants, in all twenty-seven; and their duties were to perform bloodletting, apply leeches, poultices and frictions, and to administer baths and the like, so that they were compelled to be constantly breathing the exhalations from the bodies and clothes of the sick, as well as to handle and touch them. The same immunity was enjoyed by certain officers and subalterns who lived in this hospital, were in the sick wards once a day, and at other times were in constant communication with the hospital assistant and pupils. The

washerwomen of the hospital likewise escaped, who, it is well known, are extremely apt to suffer from diseases actually contagious.

Dr Albers, in his report to the Prussian government, observes that in Moscow there have been cases fully authenticated, where nurses, to quiet timid females labouring under the disease, have shared their beds during the nights, and that they, notwithstanding, have escaped uninjured, in the same manner as physicians in hospitals have, without any bad consequences, made use of the warm water which, but a few moments before, had served as a bath for patients labouring under the cholera.

We have already alluded to the exemption of the civil servants of the East India Company from the disease. But if the disease were contagious, we might expect that Europeans of the class of civilians would have suffered equally, or even in a greater degree than the residue of the European population, inasmuch as their intercourse with the natives was much greater than that of others.

But we have even more conclusive facts than these, in proof of the non-contagiousness of cholera. The official report of the medical committee established by the Emperor at Moscow states, that a physician who had received several wounds in dissecting the bodies of those who had fallen victims to the cholera, continued his operations, having merely touched the injured parts with caustic. He did not contract the disease. A drunken invalid, an assistant in the dissections, having also wounded himself, had an abscess, which doubtless showed the pernicious action of the dead flesh, but the cholera did not attack him. Dr Foy, an eminent physician at Warsaw, in a letter to the Royal Academy of Sciences at Paris, states, that he exposed himself in every manner to the infection; he infused into his own veins the blood of an individual who was dying of cholera; inhaled the breath of patients suffering under the disease; and even tasted the matter ejected from their stomachs, without sustaining any injury from the experiment beyond a slight nausea and headach.*

* Dr Foy imagines that the cholera has its seat in the spinal nervous system, and that all the functions of the skin being impeded, the restoration of these to their natural activity is indispensable to a cure; hence in the Russian soldiers, whose habits are disgustingly filthy, and whose skin was in many instances covered with dirt of more than a line in thickness, the disease generally terminated fatally. Habitual intemperance, disorderly living, and want of cleanliness will generally, Dr Foy informs us, expose to an immediate attack of the disease,

It is scarcely necessary, even would our limits permit, to enter into an examination of the remaining circumstances adduced by the contagionists in favour of their side of the question. Many of them are deficient in those details, a knowledge of which is essential before we can determine their proper bearing; others are as readily explained without the supposition of contagion as by its admission, while a third, and by no means small class, are precisely among those which we should select to prove that the spread of the disease was totally unconnected with a contagious principle. The facts which we have already adduced are fully sufficient, we conceive, to establish the strictly epidemic character of cholera, and its production by causes independent of a poisonous exhalation from the bodies of the sick, or from fomites, in the proper sense of that term.

All the facts connected with the disease which have come to our knowledge, and we believe they are all which have as yet been made public, show that the proper course of our public authorities, in order to prevent the occurrence amongst us of this formidable pestilence, does not consist in the imposition of additional and burthensome quarantine regulations, or a system of non-intercourse with the infected ports. On the contrary, they prove, that the only effectual preventive is, to establish at home an enlightened system of medical police; to take effective measures to ensure the cleanliness and proper ventilation of our cities and their suburbs; to enforce upon every class the importance of temperance, and especially of abstinence from every species of intoxicating drinks; to promote by every means in their power the comforts of the poor; to prevent their exposure to excessive fatigue, to cold and dampness, and to endeavour to supply them with food which is at once cheap, sufficient in quantity, and wholesome in quality; and by all means they should continually endeavour, instead of exciting unnecessary alarm, to tranquillize and strengthen the public mind, and to inspire confidence in all classes of our citizens. So far as these important points are effected, we may rest assured that the danger of the introduction of cholera into our country will be removed.

while the contrary habits will almost invariably be found preservatives.—*Journal of the Royal Institution, Aug.* 1831.

ART. XVII.—MEDICATED INHALATIONS IN CONSUMPTION.

A Dissertation on the Influence of Heat and Humidity, with Practical Observations on the Inhalation of Iodine and Various Vapours in Consumption, Catarrh, Croup, Asthma, and other Diseases. By JAMES MURRAY, M.D. *Member of the Royal College of Surgeons, and Extraordinary Member of the Royal Physical Society of Edinburgh. London,* 1829: *pp.* 305. *With an Appendix.*

Cases Illustrative of the Efficacy of Various Medicines administered by Inhalation in Pulmonary Consumption, in certain morbid states of the Trachea and Bronchial Tubes, attended with distressing cough, and in Asthma. By Sir CHARLES SCUDAMORE, M.D. F.R.S. *&c. London,* 1830: *pp.* 113.

Two Memoirs read before L'Academie Royale des Sciences, at Paris, on the successful Inhalation of Diluted Chlorine in the early stages of Consumption, as a remedy capable of prolonging life, and of alleviating the distressing symptoms in the more advanced stages of that complaint: With cases illustrating the method of administering the gas, and showing its beneficial effects. Translated from the French of M. Ganal, by W. T. C. POTTER, M.R.I. *Operative Chemist. London,* 1830: *pp.* 93.

On Baths and Mineral Waters. By JOHN BELL, M.D. *&c. Chapter VIII. Vapour Baths.*

Our object in placing the title of the last of the works enumerated above at the head of this article, is, that we may be enabled with more readiness to supply an omission in another quarter from which we had been promised a review of the works of Murray, Scudamore and Ganal, on the inhalation of gas and medicated vapours, for the cure of pulmonary diseases, and especially of phthisis.

The prominent facts respecting the new mode of applying iodine and chlorine, with connecting commentaries and critical remarks, have been considered by Dr Bell, towards the conclusion of that chapter of his work which treats of '*Vapour Baths*,' in all their varieties. Some useful hints are also furnished by him in relation to the breathing of common aqueous vapour and the fumes of tar. We shall,

therefore, without farther preliminary, avail of the labour of this author, adopting his sentiments and language as our own, for the purpose of placing without delay before our readers a sketch of the merits of the practice of medicated inhalations. We do this the more willingly, as it will be seen that we had not space left for that full analysis of this latter part of Dr Bell's work which we could have desired. So copious indeed are the details on the various subjects of which he treats, that what we borrow on the present occasion is but a portion merely of the chapter on Vapour Baths. Hence, while benefiting our readers, we shall not incur the accusation of impoverishing him.

After giving the division of vapour baths, and detailing their primary effects, and the history of the practice of using them, the author proceeds to notice first the remedial value of simple watery vapour given out from hot springs, and next, of artificial vapour baths, and the numerous maladies in which they have been found serviceable by Clarke, Blegborough, Gibney, Cochran, Marcard, Andria, Assalini, Coxe, &c. Sulphurous fumigations are next spoken of, and the best means of employing them specified, as well as the diseases cured by them, agreeably to the experience of Galés, Assalini, De Carro, Emerson, &c. After this comes a review of the practice to which we propose to restrict ourselves in this article.

The extravagant hopes, says Dr Bell, entertained by Beddoes, and others, of the wonderful effects which were to be produced, by breathing factitious airs, gases in specified quantities, mixed with atmospheric air, have been long since dissipated; and the physician no longer hopes to find in the inhalation of pure oxogen gas, or nitrous oxide, a suitable stimulus to rouse the system from torpor, and to cure disease depending on obstructions, defective secretions, &c., nor in nitrogen or carbonic acid similarly used, a sedative to allay excessive arterial excitement and too abundant hematosis.

Recently the practice of inhaling medicated vapour has acquired some vogue, but we are constrained to admit that although it merits still farther cautious and systematic trials, the result, so far, have not by any means been of that conclusive character which entitle it to our confidence. In this remark we mean to refer more particularly to medicated vapours, by the addition of active chemical agents, rather than to simple aqueous vapour. Of this last I have, remarks Dr Bell, already spoken in terms of eulogy, nor can it be doubted but

that it is an agent which might be, and ought to be, still more extensively used than hitherto, in some one stage of nearly all the diseases of the pulmonary apparatus.

The vapour of tar was at one time recommended as peculiarly adapted, by its alleged balsamic powers, to heal ulcers of the lungs. Dr Mudge, on the subject of his inhaler, recommended the fumigations of balsams, and laid especial stress on the virtues of tar; so much as to assert in a strain abundantly extravagant, that much of the benefit which consumptive patients experience from sea voyages is derived from the tar vapour constantly present on board a ship. Its place among the remedies for this disease has been mainly preserved for it by the essay of Sir Alexander Crichton.* Dr Paris (*Pharmacologia*) is inclined to think well of it from the result of a trial of its effects. No details are given to strengthen the faith of the reader. He goes on to say, "The tar employed should be that used in the cordage of ships, to every pound of which half an ounce of sub-carbonate of potass must be added, in order to neutralize the pyroligneous acid generally found mixed with tar; the presence of which will necessarily excite coughing; the tar thus prepared is to be placed in a suitable vessel over a lamp, and to be kept *slowly* boiling in the chamber during the night as well as the day; the vessel, however, ought to be cleaned and replenished every twenty-four hours, otherwise the residuum may be burnt and decomposed, a circumstance which will occasion increased cough and oppression on the chest."

Iodine, of late years so extensively employed in scrofulous affections and morbid mucous discharges, has been very recently recommended to be converted into vapour by a mild heat, and in this state inhaled for the cure of chronic bronchitis and pulmonary consumption. The chief writers in favour of this practice are Drs Murray, Scudamore, and Berton. The first of these seems entitled to the merit of priority of suggestion, as well as of having tested his idea by actual experiment.

"The valuable property," says Dr Murray, "possessed by iodine, of subliming where *moisture is present*, below the temperature of boiling water, and of remaining diffused at low degrees of heat (even that of the atmosphere), when humid, entitles it to attentive consideration as a remedy by inhalation."

* An Account of some Experiments made with the Vapour of boiling Tar, in the Cure of Pulmonary Consumption.

The apparatus described by Dr Murray for the supply of simple or medicated vapour to be inhaled by the patient is very simple.

It consists first, of a turned iron vessel holding four gallons of water. It may be made larger or smaller according to the dimensions of the apartment and season of the year. This vessel requires to be replenished with water three times in twenty-four hours. Where it is desirable to preserve uniform temperature, boiling water can be used in refilling the vessel. 2. A large stopper for introducing the water: it is furnished with a hook on which a small bag of iodine, hops, or any eligible substance can be suspended in the steam. 3. A wet cloth to be thrown round the pipe, to condense the vapour if it comes over too rapidly. 4. The orifice where the steam escapes: it is best made with a screw, in order to adapt an additional pipe where the bed is distant. The opening is about a quarter of an inch in diameter. 5. A small slide, with hooks, on which a cup of iodine, or any other medicine may be suspended by the jet of hot vapour, if this method be preferred to suspending the substance within the vessel. "Here it may be remarked," says Dr Murray, "that with a moderate fire, and heat of the room at 68°, a thermometer placed three inches from the orifice in the steam arose to 178°; in seven minutes, at six inches distance, to 148°; at nine inches, during seven minutes, to 120°; at one foot, during seven minutes, to 100°; at fourteen inches from the mouth of the pipe, the vapour can be easily inhaled, if requisite."

As intimately connected with the practice of inhaling vapours and showing the philosophy on which it rests, and the means by which, generally, it ought to be carried into effect, the following remarks of Dr Murray will find properly a place here.

"We observe how copiously the minute odorous particles of flowers are communicated, and rendered sensible to our olfactory organs, when the air is loaded with moisture, which, in a dry atmosphere, or when the membranes are thickened, or parched by a cold, could scarcely be perceived.

> "'In climes full of sunshine, though splendid their dyes,
> Yet faint is the odour the flowers shed about:
> 'Tis the clouds and the mist of our own weeping skies,
> That call their full spirit of fragrancy out.'

"Besides, it appears to me that there is a condition of the mucous membranes of the air passages and vessels, in certain stages of pulmonary complaints, in which the tissues are preternaturally dry,—either from their texture being altered by cold or excitement, their pores closed, the natural lubricating mucus and fluids dried, or not

secreting, and a certain morbid thickening of the coats of the air tubes taking place, calculated to diminish the calibre of their cavities, as well as to render their tunics less permeable to the air during respiration. This state of the parts will be much benefited by inhalation of aqueous vapour judiciously applied. The old or common mode of drawing in *vapour by the mouth, and cold air condensing it by the nostrils*, was calculated, in many cases, to produce more injury than benefit. After premising the most approved modes of removing or preventing the accession or progress of inflammatory action, the vapour of water should be made the vehicle of communicating such desirable medicinal qualities or principles, as are soluble or diffusible in it. Nor is it the worse than useless method of breathing, for a few minutes, from a teapot, or a tin inhaler, that can benefit. On the contrary, the advantage is derived from the long continued contact of the humid vapour, and the *regulated temperature*, keeping the otherwise dry and parched coats of the pipes bedewed for a *sufficient time*, to enable the alteration in their condition, and the softening in their textures, to begin, and proceed, so far as to induce a new and more healthy state of their proximate principles, and a more natural condition of their actions, secretions, and circulations.

"But if the simple contact, and more permanent application of aqueous vapour alone, aided by the influence of altered temperature, and disposition of parts, can be so productive of good local effects, when properly applied, both as to time and method, is it not right to infer, that water may be the medium of conveying medicated vapour to internal surfaces, likely to profit from their application? The vapour of water, contained in the atmosphere, will communicate to a man in health as much of the soporific qualities of certain vegetables, if strewed around, as will compose and dispose to sleep. I hope yet to see the day, when some salutary mode of preventing many untoward degrees of pulmonary affections, may be directly exhibited to the parts in danger, through the medium of vapour; many of the primary degrees of disease, in those parts, removed; several of the more advanced or incurable stages relieved; the ravages of hepatization and ulceration retarded; and, where that termination is unavoidable, the approaches to dissolution smooth and composed."

"But inhalation of vapour has several advantages more than those of prevention, as above stated. Even in advanced pectoral affections, such as ulcerated lungs, or diseased mucous surfaces, the volume of aqueous vapour taken in lessens the proportion of atmospheric air presented to these parts. When they are denuded, parched, or inflamed, air affects them as a very active stimulus. Its perpetual renewal, at each inspiration, produces, by its frequent contact, injuries, which its more diluted or attenuated introduction would be less likely to accomplish. Therefore, if you inhale vapour which

condenses in the cells, at least a small part of it, it bedews and covers the surfaces and ulcerations, by which means you exclude the application and arid excitement of the dry air. You do more: if you inhale ten inches of artificial vapour of water, mixed with ten of atmospheric air, you go far towards warding off the irritation of the latter from the moistened membranes *and superficies of the sores.*

"It is incredible the quantity of watery vapour that may be taken into the lungs; a patient will inhale it during four hours, through a close bag, appearing to admit little atmospheric air."

In using, says Dr Murray, the apparatus already described, or when a cup, tube, or vial containing moistened iodine is placed in the stream of vapour, the iodine sublimes in beautiful violet exhalations, from which the substance itself derives its name. "I mention this," continues Dr M. "because I knew a young lady, a patient, very much alarmed when she saw the vapour approaching her breath, purpled almost like the ominous colour of blood.

"In places where the vapour is not observable, holding a spoon wet in starch and water, near it, soon turns the starch blue, and is a proof of its rising in the room.

"In this trial the heat must not be high, and the iodine requires to be simple, or uncombined. I have noticed that the vapour of iodine, mixed with that of water, tinges a silver spoon gold colour, then dark. In summer, or where it is not advisable to keep the apartment warm with the boiler, a small cup of moistened iodine, set in a bowl of hot water, elevates abundance of the medicine through the air about the bed. It is less liable to decomposition in this way, than when mixed in water in a tin or iron boiler, where a sediment like damp or wet rust of iron soon subsides.

"It is so easy to keep the air of a room, in which vapour of water is diffused, so impregnated with iodine fumigation, that there is less necessity for resorting to any of its compound vapours. The gas, however, which is a component of hydrogen and iodine vapour, called *hydriotic*, could be easily diffused, in dense white clouds, from water charged with it. This, also, would saturate the atmosphere of an apartment, without the aid of artificial heat. Where there is the hectic flush and undue evolution of animal caloric, and when the palms of the hands feel much hotter than they really are, a wide mouthed vial of moistened iodine, grasped in the hand, abstracts its fervid temperature, and at the same time supplies the breath with abundant odour of the shore. A thousand other means of diffusing the fumes of iodine present themselves: a vial, a cup, or a glass tube, containing wet iodine, if suspended in the jet of steam, as it leaves the orifice of the pipe, will spread the vapour far and wide. In this manner a stream of it can be directed by a thin glass pipe, over the

patient's face in bed, its great specific gravity causing it to fall and be inhaled. An atmosphere of iodine vapour, and that of water mixed with air, can be regulated to such strength as the patient finds agreeable. Such an apartment instantly reminds you, on entering, of the smell arising from kelp kilns, when burning marine vegetables along the coasts."

Plausible as are the views and suggestions of Dr Murray, they are corroborated by one case only of iodine inhalation; the success in which, without being complete, was still encouraging.

Doctor, or, as we must now call him, Sir Charles Scudamore, has lately published a small treatise in which he gives the history of some cases intended to show the sanative properties of iodine vapour when inhaled. He denies in his preface being a copyist of the views and practice of others in this particular point, and tells us that when he commenced his investigation of the powers of iodine, used in the way of inhalation, he had never heard a suggestion of the subject. All this may be so. It only shows that Sir Charles did not read on the subject which was engrossing so much of his thoughts. His preface is dated November 12th, 1830. Dr Murray's work was published in London in 1829, and the case detailed in it was attended by him and Dr Fourcade in the latter months of the same year. Sir Charles refers indeed to this work in the body of his treatise. But there is another more serious complaint to be made against Sir Charles. He dwells with considerable complacency on his success with the new remedy, gives a detailed account of several cases in which it formed part of the treatment; but he takes especial care not to favour us with a description of the mode of using it, nor of the apparatus by which it is administered. If this is not charlatanry, it comes so near the thing as hardly to require another name to designate it. As, however, his compatriot medical critics and reviewers have so freely commented on the impropriety of this conduct, we shall refrain from any further censure on it in these pages, than merely to hope that quackery, consisting, as it does, in concealment and implied fraud, will never be tolerated by a profession called liberal.

The nearest approach to gratifying our curiosity, as to the mode of employing inhalation used by Scudamore, is in the following sentence; in which, after speaking of his failure in other means, and his resolving to have recourse to iodine, he says, "I employed a preparation of it miscible with hot water, so as to remain in permanent solution, using for the purpose of inhalation a glass apparatus, well

fitted in its construction for the exhibition of the remedy in the form of vapour."

The cases detailed by the author are not so conclusive of the paramount virtues of iodine, as illustrative of its being a very useful auxiliary remedy; since other substances were added to it, and being converted into vapour, were inhaled at the same time. The first two cases of pulmonary consumption of which he gives an account, were, he foresaw, evidently incurable. Still he had reason to be satisfied with the power displayed by the iodine of mitigating some of the most violent symptoms, and giving the patients comfort. After describing the condition of the first patient, he goes on to say:

"I prescribed a weak solution of iodine, with the addition of some saturated tincture of conium, mixed with water of 120 degrees of heat, to be inhaled for fifteen or twenty minutes, three times a day. I directed him to take a minim of a solution of acetate of morphia, containing a grain of the acetate in six minims, in a simple saline draught at bed-time, and to repeat this dose in an hour or two if necessary; to regulate the bowels by simple means; to wash the chest and upper part of the back with a mixture consisting of two parts of water, one of eau de Cologne, and one of vinegar; dipping a towel in the lotion for that purpose.

"I shall confine myself to a general statement of the further particulars of this case, as its termination was so necessarily fatal.

"On first using the inhalation, he experienced slight giddiness for a few minutes, and some sense of soreness with dryness in the tongue and throat; but the patient rather mentioned these sensations on being interrogated than complained of them; and they did not continue. He soon found that it afforded him great relief, the power of expectorating being remarkably facilitated; the cough also very much abating; the respiration becoming comfortable; and the chest materially freed from oppression. In all respects, he improved in a surprising manner. At the end of a fortnight, the pulse ranged below 100; the looks and the strength were improved; and both he and his friends, flattered by this rapid amendment, anticipated an eventual recovery of health."

The patient went out of doors twice, caught fresh cold, and in two months from the date of his physician's first visit ceased to live. "He always expressed in strong and grateful terms how much comfort and benefit he derived from the inhalation."

In the second case, pulmonary consumption in its last stage, the treatment was as follows:

"I prescribed an inhalation of iodine with conium, the sixth of a grain of acetate of morphia at night, and medicine in the day cal-

culated to allay the intestinal irritation. I directed the chest to be washed with the compound vinegar lotion (page 329). The diet was made as nutritious as the weak digestive powers would allow.

"Extremely debilitated as this patient was, he could use the inhaler without difficulty; thus affording a proof of the convenience of this simple apparatus. The relief which was obtained from this process in the course of a few days was most remarkable, and such as to exceed my utmost expectations. The patient's description of the effects of inhaling was, that it abated the cough remarkably, and rendered the expectoration, which before had been much suppressed, easy and free; from which change ensued a comfortable state of chest, with a great improvement in the breathing. He observed, that he felt the inhalation very sensibly traverse the chest; causing an agreeable sense of warmth. By means of the acetate of morphia, the nights were passed in comfort. On former occasions, when opiates had been given, they disagreed so exceedingly, that he declared 'the remedy was worse than the disease.'"

This patient continued in a course of alternate amendment and relapse for many weeks, and finally sank under his disease.

The account of this case began thus: "Hæmoptysis, succeeded by ulceration, hectic fever, well marked; from all concurrent symptoms, the existence of phthisis pulmonalis established; the curative powers of iodine inhalation strongly displayed."

The subject here was a female aged thirty-four years. We have not room for a notice of the symptoms. Percussion and auscultation were had recourse to in all the cases.

The doctor describes the treatment thus.

"I prescribed a weak solution of iodine for the inhalation; internally, from one to two minims of the solution of acetate of morphia; and the following draught before rising in the morning.

℞. Magnes. sulphat. ʒi.
Infus. rosæ ʒxii.
Acidi hydrocyan. ♏i.
Syrupi tolutan. ʒi.—M. fiat haustus.

The chest all round was washed night and morning with the compound vinegar lotion.

"The diet was limited to boiled fish, vegetables and farinaceous puddings. At the end of a few days she found herself improved, and particularly as to the greater facility of expectorating, more ease of chest, and better respiration. The cough, however, still being very irritable, I added conium to the inhalation."

At the end of a fortnight the symptoms were greatly mitigated and the amendment very obvious. Fresh cold was taken, however, and the cough became more irritable. The inhaling mixture was

changed for one consisting of conium and prussic acid. This indisposition soon yielded to treatment, and the iodine inhalation with conium (hemlock) was resumed, and with an increased proportion of iodine. Among other evidences of returning health on this course were gain of flesh and strength.

She had been most attentive to the use of the inhalation three times a day, and extolled it as the source of her improvement. The morphia was discontinued at night.

The diet is worthy of notice. "She took mild animal food each other day, and at dinner two ounces of old port in a tumbler of cold water. She continued the use of the vinegar lotion. She took carriage exercise when the weather was favourable, and walked out occasionally."

In another fortnight her physician "prescribed a saline draught, omitting the hydrocyanic acid, and allowed her to take meat or poultry every day. She continued to amend regularly. The catamenia returned. Three months having elapsed, she had recovered so completely that no farther treatment appeared to be necessary. For the last week she had inhaled twice a day."

The cure in this case was complete.

The fourth case in Sir Charles Scudamore's practice is described as, "Bronchitis attended with high irritation. The existence of tubercles questionable. The utility of inhalation well shown, as materially assisting in the removal of the symptoms."

It is not to be expected that we should repeat the account of this or of the cases which follow, in the same detail as the others. Our object was to make the reader acquainted with the practice of Dr Scudamore, and to apprise them of the share which the inhalation of iodine may be presumed to have had in the cure. In this case of bronchitis, the treatment consisted of leeches to the right side of the chest, and the lower part of the sternum, and a blister between the shoulders; acetate of morphia at night; a mixture, in the day, with sulphate of magnesia, infusion of roses, and one minim dose of hydrocyanic acid; and an inhaling mixture composed of conium, hydrocyanic acid, and an alcoholic tincture of ipecacuanha.

At the end of a few days, the urgent symptoms being relieved, the use of the iodine inhalation with conium was directed, the other medicines being continued in minor doses. The inhalation was used for twenty minutes, three times a day, and at the end of a week the proportion of the iodine was increased, and the conium was omitted. This change was made on account of the diminution of all the symptoms.

Case fifth was of chronic cough depending on tuberculous irritation, cured by the inhalation of iodine and hemlock.

Sir Charles seems aware of the doubts which may be raised respecting the cause of his success depending so much on inhalation, and replies to the objection in these words: "In answer, I must observe that an immediate and decided relief to the cough was given by the inhalation, such as could not be ascribed to any other cause; that various medicines which had been tried had proved ineffectual; and that in similar cases I have wholly failed to produce the same benefit by internal medicines alone."

The history of case sixth is thus headed: "Phthisis pulmonalis; tubercles in each lung; great probability of an ulcer at the apex of the right lung; hectic fever present; the iodine inhalation highly beneficial; the tubercular irritation removed; and the patient restored to health."

The seventh case was of "Empyema with tubercles in the lungs." The patient was at one time convalescent; but exposure brought on a relapse which terminated in death.

In the eighth case there was ulcer of the larynx, with tubercles at the apex of the lungs. The good effects of iodine inhalation were well exemplified; although the termination of the case was fatal.

Case ninth was "Asthma—bronchitis—promptly and very remarkably relieved by inhalation of iodine with conium."

Case tenth. "Chronic bronchitis. The cough extremely urgent; the secretion from the mucous membrane remarkably viscid. The iodine inhalation curative within a short period of time."

Case eleventh. "Habitual asthma. The difficulty of breathing, attended with distressing cough, readily induced by cold, damp, and especially by foggy states of the atmosphere. The symptoms satisfactorily relieved by inhalation."

Case twelfth. "Chronic laryngitis. The symptoms immediately relieved by an inhaling mixture of conium with hydrocyanic acid; and the affected parts further restored by the inhalation of iodine."

Case thirteenth. "Common irritable cough; speedily cured by inhalation of conium."

Case fourteenth. "Chronic bronchitis. The cough extremely urgent, and the bronchial secretion unusually viscid and tenacious. The cure effected by inhalation and counter-irritation."

Case fifteenth. "Bronchitis unaccompanied with fever. The cough very urgent, and remarkably relieved in a short time by an inhaling mixture of conium, hydrocyanic acid, and ipecacuanha."

Case sixteenth. "Spasmodic asthma. Very satisfactory relief obtained from the inhalation of æther, conium, and ipecacuanha."

It will be seen from the above cases, that Sir Charles Scudamore has not pretended to restrict himself to the use of iodine inhalation alone; and it is difficult to say how far we can yet rely on this agent for the cure of the diseases mentioned by the author.

In his "General Observations and Conclusions," he endeavours to apologize for what he knew to be censurable in his concealment of the precise mode of conducting inhalations, by alleging his fear that patients might be tempted themselves to undertake the treatment of their own cases, if he introduced the formulæ of the remedies for inhaling. This is rather strange language from a professional man, who under circumstances like the present is presumed of course to be addressing himself to medical men, and not laying baits for catching patients by such half and half notices. Even if Scudamore wrote for popular use, he ought to have given every the minutest detail of his practice, to prevent the mistakes and imperfect trials which he professed to dread; and which are much more likely to occur to patients than if he had frankly told them all he knew of the subject.

As a kind of atonement, he offers the following farther particulars for the information of the professional reader.

"As by mixing the tincture of iodine with water, the iodine itself separates into flakes, which become precipitated, and as this medicine is very sparingly soluble in water alone, I found it expedient to form a preparation which should be uniform, and preserve its transparency when united with water. This advantage is effected by adding together iodine, hydriodate of potash, distilled water, and alcohol. The proportions of the ingredients are to be varied according to the circumstances of the case.

"The tincture of conium is a saturated tincture prepared from the dried leaves.

"The tincture of stramonium is a saturated tincture prepared from the dry leaves and stalks.

"The tincture of ipecacuanha is a spirituous tincture prepared from the roots.

"The hydrocyanic acid which I have always employed was of the specific gravity .994.

"The æther employed is the pure sulphuric æther.

"The chlorine solution is the saturated solution of pure chlorine gas in distilled water.

"Of all these agents, the iodine is the most active, and that in which I place my confidence as the curative remedy in phthisis pulmonalis. The temperature of the water with which the preparation

is to be mixed should be from 115° to 120° of Fahrenheit; and, when the proportion of iodine is increased to a full measure for each inhalation, I direct that the quantity be divided into two equal portions, the one to be used for the first ten minutes, and the other for the same space of time in continuation; and, as the average frequency, three times a day: but sometimes it may be expedient to use it for ten or fifteen minutes only at a time, and three or four times a day. The inspiration should be as strong as can be conveniently made, in order that the vapour may freely enter into the lungs: but the patient should inhale in a manner not to fatigue the chest; and this evil will be avoided if he allow himself sufficient interval between the periods of inhaling to recover power.

"I lay it down as a principle, that inhalation should always be so conducted as not to produce distress to the patient in any way, either as regards the composition of the mixture, its strength, or the period of carrying on the process.

"In first entering on the treatment of inhaling, the irritation of coughing is usually produced; and in some cases this happens on every subsequent occasion; but, unless this prove excessive or permanent, it does not form an objection to the treatment, for the power of expectorating is remarkably facilitated, and, the bronchial tubes being cleared, a material subsequent relief to the cough is afforded. But a curative and not merely a palliative effect is the object to be held in view.

"The proportion of alcohol contained in the different materials is too small to produce any inconvenient stimulation; it is necessary as the menstruum, and it is useful also as causing the volative parts of the medicine to rise more freely with the watery vapour.

"The administration of the iodine inhalation is improper when any decided inflammatory action is present. It happens, occasionally, in phthisis pulmonalis, that blood is coughed up, either pure or mixed with the sputa. In the first case, it is most probably the consequence of a rupture of vessel, caused by the force of coughing, when there is an increased capillary circulation; and such appearance should induce us either to suspend the inhaling process altogether, or to use only sedative ingredients till the expectoration cease to be coloured. But, when the blood is of a very dark colour, instead of being of a bright scarlet, and, more especially, when it forms only a proportion of the sputa, we may conclude that it is the consequence of that slow ulceration by which small vessels are eroded; and in such circumstances I have not been deterred from using the iodine; but have always blended with it the conium. The disappearance of colour in the expectoration will confirm the propriety of the treatment.

"The admixture of iodine, and also of chlorine, with hydrocyanic acid is incompatible; as is also that of iodine with chlorine.

"The tincture of conium is usually very soothing in its effects, and may be mixed with any other materials.

"Tincture of opium may sometimes be used advantageously, either alone or as entering into the composition of the inhaling mixture. I have occasionally added it to the iodine solution; but, for the most part, I give the preference to the conium.

"The tincture of digitalis produces sedative effects, and more especially when united with the hydrocyanic acid. In one case in which spasmodic irritation, united with slight symptoms of inflammatory action, prevailed to a great degree, I obtained the best effects from this mixture.

"The tincture of stramonium exerts an antispasmodic power in asthma.

"The tincture of ipecacuanha is expectorant.

"The internal use of hydrocyanic acid is by some practitioners contemplated with great apprehension. I do not prescribe it except in very small doses, and which are perfectly safe; but I can confidently state that no inconvenience attends its employment as an ingredient for inhalation, while it often proves highly serviceable as a sedative and antispasmodic. The dose which I have usually employed has been from three to six minims, using the water from 100 to 110 degrees.

"Æther is found to be very useful in a spasmodic condition of the air passages, and contributes to facilitate expectoration. It may be joined with any of the other ingredients, or used separately. Such is its great volatility, that the water in the inhaling bottle should not be of a higher temperature than 100 degrees; and the quantity should be renewed every three or four minutes, ten minims being added each time; but the water need not be changed.

"In cold weather, especially, it will be necessary to keep the bottle containing the inhaling mixture (of any kind) immersed in hot water, during the process, in order that the proper temperature may be kept up."

Dr Berton having first assured himself of the innoxious nature of the air loaded with iodine vapour, by experiments on animals, had recourse to it as a remedy for pulmonary consumption. Three patients labouring under this disease were, as he informs us, somewhat benefited. No cure is reported. Dr Berton feels more confidence in its efficacy when employed in chronic bronchitis. His mode of administering the remedy is thus described. In a flask with two tubular openings, he puts diluted sulphuric acid, and on this projects a quarter or half a grain per diem of the hydriodate of potassa; the iodine is promptly disengaged in the form of vapour, and this is inhaled by the patient through one of the tubes of the flask.

The process is repeated from four to ten times a day; the duration of each being from four to five minutes.

Here we have not only the inhalation of iodine vapour suggested, but actually employed as a remedy for pulmonary consumption, and the mode of using it described by Dr Berton nearly two years* before Sir Charles Scudamore favoured us with his treatise, and the excuse for his withholding details, which every physician is bound to lay before his professional brethren—either when he publishes on the subject, or when invited by them to make the communication.

In addition to the use of vapour by inhalation, it has been, as the reader may remember, advised by Assalini and others to be directly applied to the inflamed surfaces of the eyes, ears, nose and mouth. For this purpose simple aqueous vapour has been found very serviceable, or that obtained from infusions of chamomile flowers, belladonna, digitalis, poppy heads, &c. In ophthalmia we are not sufficiently alive to the great relief obtained by such means—when all the collyria in the form of washes, aqueous or spirituous, with various salts in solution fail entirely. After the first or acute stage of inflammation of the mucous covering of the eye (*conjunctivitis*) has passed, but there still remains great pain, weeping, redness, and engorgement, the application of iodine vapour to the part, as recommended by Dr Murray, will be attended with happy effects. Nor can we doubt that in ulcerations following otitis, the fetor of the discharge would be removed, and the diseased surface be made to take on a healthy action by similar means, or by the union of iodine and conium vaporised.

Chlorine, taken by inhalation, is a remedy now engaging the attention of the profession. As is usual on these occasions, we have remote analogies and coincidences introduced as proof direct, in favour of a practice which was originated on other grounds.

Dr Murray, in the work often referred to, speaks thus on the subject of chlorine.

"If the statement of our respected friend, Mr Greenfield, be proved correct, that an atmosphere of chlorine gas and vapour of water prevents consumption, among his paper makers, a class of persons most of all obnoxious to that complaint, from their confinement, part of the day, in thick clouds of dust in a rag-loft of the

* The above notice of Dr Berton's practice is taken from the North American Medical and Surgical Journal for July 1829.

paper mills—if chlorine and steam, dissipated through the works, can prevent phthisis, is it not reasonable to suppose similar means might contribute towards the cure of persons who might have contracted the complaint? Would not, therefore, the junction of chlorine gas, and that of iodine, be a rational proposal, regulated, of course, according to the different degrees of the disease?"

By similar arguments we might be persuaded that the vapour from oak-bark decoction is useful in phthisis, since it is stated in some of the periodicals that tanners were not observed to be liable to the disease.

M. Gannal, a chemist of Paris, has tried the chlorine inhalation in many cases of pulmonary consumption; but as far as we are able to judge from the published accounts of his practice, and even from his own statements, biassed as they are by excessive partiality for the remedy, we should not feel disposed to regard it as safe and salutary in this formidable disease. Farther trials may be justifiable, but they ought not to be made without a full conviction of the powerfully irritating nature of the chlorine. As good a summary of the opinions and facts in this matter, as we are yet possessed of, will, we believe, be found in the following notice from the North American Medical and Surgical Journal for January 1830.

"At a meeting of the Royal Academy of Medicine of Paris, (Section of Medicine) 11th of August 1829, M. Desportes reported on a case of phthisis cured by means of inhalations of gaseous chlorine, by Dr Cottereau, *aggrégé* of the faculty of medicine of Paris. The subject is a young medical student, of delicate health, and in whom all the symptoms of the tubercular affections of the lungs were observed in a very high degree. The patient was in a frightful state of debility and emaciation, and the disease appeared to be beyond all hopes of cure, when Dr Cottereau, by means of an instrument of his invention, administered the chlorine gas. The influence of this treatment was rapid, and the young man recovered perfectly. At the time the case was drawn up, *four months* had elapsed since the cure, and the subject of the case continued well, although he had applied himself to hard study, and had made botanical excursions of seven to eight leagues in one day.

"The reporter is of opinion that the chlorine exerted a beneficial influence on M. Cottereau's patient, and affirms, that he has derived similar effects from this agent. He regrets, however, that the author has not entered into greater details relatively to the action of the chlorine. He adds that he has noticed the following symptoms after the administration of the remedy: irritations of the mucous membrane of the pharynx and bronchiæ, propagated to the lungs,

copious expectoration, dry and fatiguing cough, redness of the cheeks, hot skin and frequent pulse. The vapours of chlorine can produce suffocation; but with care it is easy to guard against all accidents. The reporter concludes by proposing, 1. That the Academy address thanks to Dr Cottereau. 2. That the latter be requested to continue his trials with remedy, and particularly to make experiments on animals in a state of health and disease, in order to ascertain the effects of clorine. 3. That he be requested to communicate to the Academy the results, whether favourable or not, of his observations.

"M. Honore stated the case of a young woman, affected with phthisis pulmonalis, whom he treated, last winter, by means of chlorine gas. He obtained no success. M. Coutanceau announced that the chemist Gannal made a number of experiments of the kind at the Val-de-Grace, but without the least success. MM. Moreau and Merat cited instances in which chlorine administered in too great quantity occasioned injury to the patients. Finally, M. Rullier remarked that he had resorted to this remedy in his hospital, but hitherto without advantage. Notwithstanding this unanimous opposition to the beneficial effects of chlorine, the Academy decided that thanks should be addressed to Dr Cottereau."

Sir Charles Scudamore remarks on the subject of chlorine inhalation:

"Of the chlorine solution I have to observe, that, as a remedy employed in the same manner and with the same views as iodine, it has not afforded me results approaching in value to those obtained from the latter medicine. In several cases of phthisis pulmonalis I substituted the chlorine for the iodine; but did not continue its use more than a few days, as its beneficial action was, in my opinion, very decidedly inferior; and, on every occasion, the patient, when resuming the inhalation of iodine, in strong language expressed his conviction of its being by far the most serviceable remedy.

"Chlorine, from its great volatility, comes over so quickly with the aqueous vapour, that the total quantity used at each inhalation should be partitioned into doses, if the process be continued beyond four or five minutes; otherwise its action will at first be too strong, and at last too weak. For the temperature of the water I prefer 110°; and for each of the subdivided doses from ten to twenty minims. I have usually found that the patient prefers the plan of protracted inhalation three times a day, to the greater frequency for a shorter time; although I consider this point for the most part optional."

In addition to the statements of Dr Bell, which we have hitherto adopted, we must add, in justice to Mr Gannal, an account of the

manner in which he directs the chlorine to be administered, and a history of some of the cases in which it was used.

"Chlorine then, as produced from its combination with oxides, is not of sufficient purity to warrant our applying it to the delicate and already irritated organs of the phthisical patient.

"To remedy this inconvenience, I make use of a solution of the pure gas in distilled water. I take a three-necked bottle: the first opening receives a straight tube, the extremity being plunged into about four ounces of water; the second opening has a tube, which leaving the top of the bottle, is bent at right angles and terminates in a flattened embouchure; the third is furnished with a glass stopper; it is by this last opening that the water is changed, and the gas introduced. The water in the bottle at the time of fumigation should be at the temperature of about 32° of the centigrade thermometer, equal to 89° 6′ of Fahrenheit's scale; a certain quantity of the liquid chlorine is then added, and by gently shaking the bottle a portion of the gas is disengaged, which may be breathed by applying the mouth to the end of the bent tube. As the air is gradually withdrawn from the bottle, a fresh quantity is supplied from the atmosphere by the straight tube, and bubbles up through the weak chlorine solution charged with the gas. The fumigation may be continued for the space of four or six minutes, after which the disengagement of the gas ceases.

"It is of the utmost importance that we proceed with the greatest caution, being guided by the consideration of the energetic nature of the means employed, as also of the delicate fabric of the organ concerned. In my practice I commence with 10 drops of the liquid chlorine to two volumes; if the patient can well bear this dose, and according to the susceptibility of his lungs, I raise it gradually to 12, 15, 20, 30, 50, 60, 72, at a time. However, there are scarcely two persons who can bear exactly the same dose; we must, therefore, as it were, carefully explore the state of the organ to be acted upon, and from thence deduce the proper quantity.

"The same reasoning holds good as regards the *number* of fumigations during the twenty-four hours."

"They must be regulated by the effect produced, and the sensibility of the parts; generally the number may be from six to eight. It appears evident, according to the above process, that the chlorine inhaled cannot enter the lungs unless impregnated with a number of aqueous particles, from which circumstance it is much less irritating than in the dry state; and lastly, not being commixed with any foreign matter, its action confined to itself is not complicated with any superadded irritation.

"We may also just observe, that the apparatus required for its exhibition is simple, easily obtained, and moreover portable, and being made entirely of glass, the chlorine cannot possibly become conta-

minated with metallic molecules, and thus interfere with its purity. It cannot, for example, act on copper, convert it into a chloride, and in this state painfully affect the lungs, or, as there have been some instances, cause extensive inflammation."

M. Ganal gives an account of the first case in which the remedy was applied, as follows:

"M. L—, of Gentilly, was a man forty years of age, of a lymphatic and bilious temperament, and had been troubled a long time with pectoral disease when he applied to me. I sent him to Dr Laennec (nephew of the professor). This physician, after examination, found that the chest under the right clavicle had a more dull sound than under the left; the respiration sufficiently free throughout the right side, was caverneuse under the armpit and clavicle, and accompanied with a sort of moist rattle; in the left portion, respiration was natural, only accompanied here and there by a slight wheezing.

"From these symptoms, M. Laennec announced the existence of a tubercle on the top of the right lung, 'and, I dare even affirm,' he adds, 'that the whole of this lung is more or less covered with tubercles of various magnitudes, indicated by the peculiar and variable sound attending respiration, as also by the crackling rattle. I think,' says M. Laennec, in conclusion, 'that this case is one in which the chlorine fumigations may be tried, but with discretion, however, on account of the disposition to hemoptysis and to pleuritic inflammation.'

"This man had been ill three years; commenced, on the 18th of October 1827, to use the fumigations, the dose being ten drops, eight times a day; from the 18th to the 23d, respiration became less obstructed, the sense of oppression was much diminished, the expectorated matter from being purulent assumed a mucous appearance, the diarrhœa ceased, appetite returned, and the digestive organs again performed their healthy functions, and he passed more tranquil nights.

"On the 23d, however, from eating herrings, symptoms of indigestion were produced, the expectoration was tinged with blood, but notwithstanding this, the chlorine was still continued, and the patient gradually progressed. No inconvenience was felt from breathing the gas; the patient seemed extremely sensible of the least atmospheric change, colicky pains were experienced on the 17th of December, but were relieved by emollient applications, the appetite continued good, digestion went on well, the patient had one stool daily, his nights were undisturbed, the nocturnal perspirations were not so frequent, the expectorated matter purulent in the morning was mucous during the day. The sense of oppression is almost gone, and the cough is much less frequent. On the 23d of Decem-

ber the pulse was 62. The season was much against the successful exhibition of the remedy, and if the man is not cured, we cannot refuse to admit that the chlorine, on the one hand, never incommoded him, and on the other, produced such alleviation that without doubt the patient's life was evidently prolonged."

The second case ended in death.

"The third case I shall mention," says M. Ganal, "is M. Le Comte de ——, who had been ill for about two years; he had taken large quantities of pectoral medicines; a blister had been applied to his arm when he left Belgium to return to Paris, according to the advice of his physician. His cough was troublesome, obstinate, always accompanied by purulent expectoration; he slept only at short intervals; a dull sound was heard at the upper part of the left lung. M. D. of a dry and warm temperament, by the advice of several physicians whom he had consulted, continued the plan of treatment already pointed out, and was recommended by them to pass the winter at Nice in Italy, or some other southern country.

"When I was called to him, I commenced the chlorine fumigations on the 21st of October 1827. Their first effects were to diminish the frequency of the cough, and the quantity of expectorated matter. The appetite improved, colour returned to the cheeks; the skin remaining dry and hard, baths were ordered, and Dr Begin recommended a mild regimen. The health of the patient has been improving since the 1st of November, and excepting certain unfavourable changes, produced by atmospheric variation, things have worn a promising aspect, and at present there is a well grounded hope of a perfect cure. The peculiar sound in the left lung has ceased, the appetite is good, the nights tranquil, the usual strength recovered, and every thing shows fair for speedy restoration."

In the second memoir, the history of this case is continued as follows.

"The Count de la Hutte continued to get better, and left Paris, the 8th of April, perfectly restored. The following is a copy of a letter respecting him, by Dr Begin:—The Count de la Hutte, by the persevering use of the fumigations, perceived both the oppression and the expectoration, which were exhausting his strength, gradually disappear. He was in the habit of taking an account of the daily number of his fits of coughing, as also of his sputas, and both diminished in a constant progression. His appetite was as good as in any former period of his life, and might be satisfied with safety. The patient felt no longer a sense of constriction in the thorax; he slept perfectly well, enjoyed the pleasures of walking and the theatre without any inconvenience. The sound which had been perceived in the chest, under the clavicle, was heard no more, and every thing indicated a cure, at once as substantial as unexpected, at least, as far as regards shortness of time, when we recollect the Count's

long previous illness. Since his departure I have kept up a correspondence with him, and, very lately, he has written me, by his physician in ordinary, Dr Francois de Mons, the following details relative to himself. 'I can assure you,' says Dr Francois, 'that, at this time, Count de la Hutte enjoys the best possible health in every respect. It might almost be doubted that his chest had ever been affected, so free at present are his respiration and speaking, notwithstanding rather hard exercise, and a regimen not quite in accordance with the laws of health. With some similar examples, sir, I promise you an ample harvest of glory, in spite of the withering breath of envy, always directed against the most useful discoveries.

"'I have watched with pleasure your continued success, whatever your medical journals may have said, too often made available by persons interested to deceive. We Belgians, strangers to your chit-chat, and that gossipping spirit so hurtful to the progress of science, will be delighted with a detailed account of the actual state of things concerning your happy discovery. If you can spare the time amidst your varied occupations, I shall be greatly obliged by your giving me some information respecting it, which it will be a source of delight to me to publish in our journals; as impartial judges, you are sure of finding in us both attention and justice.

"'I shall be charmed on my part, with being charged with a communication, which cannot but conduce to the advantage of science and humanity.'"

Of eight cases recorded this is the only one of cure. The subjects of the others were said to be benefited by the inhalations and their life prolonged. The memoir closes, however, by the history of a remarkable case of pulmonary consumption in the third stage, cured by chlorine fumigations. It is related by M. Costa.

"On the 12th of March 1827, I was called," says M. C., "to Mademoiselle Genny Wick, a native of Switzerland, aged twenty-eight years, to cure her of what she called a neglected cold. Her high stature, five feet three inches, her contracted chest, her delicate constitution, her complexion, which resembled the withered leaf of autumn, her eyes that shone with a morbid brilliancy, as also the expectorated blood, the suppression of the menstrual flux, the presence of a cough, dry at first, afterwards attended by an expectoration, abundant, and composed partly of mucous lumps, the great and increasing loss of flesh which accompanied and followed this assumed cold, the oppression which was experienced on the least motion, the difficulty of lying on the right side, the daily shivering fits, the fever and perspirations which attended every night, the want of appetite, the thirst, and above all, the dull sound proceeding from the anterior upper part of the left side of the chest, and the total absence of all respiratory sound in this part. From all these symptoms united, I

felt assured that it was no mere cold I had to encounter, but a consolidation of the upper part of the left lung, already probably in an indurated state. I had the greater reason thus to conclude, because the disease was of five months standing (having commenced in October 1826), because the mother and two brothers of Mademoiselle Wick had died of diseased lungs, and because in several colds she herself had taken since the age of eighteen years, she had not experienced either hemoptysis, suppression of the catamenia, nor, in a word, any of the symptoms which indicate any particular injury referable to the lungs.

"My opinion in this case seeming to me well founded, I ordered, with the intention of resolving the consolidation, twenty leeches to the part affected, emollient cataplasms, to be renewed several times a day, foot baths, a pectoral mixture, a cup full of ass's milk, a waistcoat of flannel, with a vegetable and milk diet.

"The leech bites bled abundantly for several hours; from this depletion no good was derived to the patient, for they weakened her greatly, diminished the expectoration, and rendered it more difficult; it also increased the oppression and the febrile symptoms. This first failure, joined to the natural aversion the patient witnessed to the leeches, made me careful, and prevented my recurring to their use, which, in some analogous cases, had given me cause to congratulate myself on my success. I contented myself, therefore, at least for the present, in pursuing the other means already mentioned, and towards the 20th of March, the patient was restored to that state in which I saw her the first time. From the 20th to the 30th of the same month, there was no change in the health of Mademoiselle Genny, with the exception of her expectoration being streaked here and there with blood; and the patient now and then experienced slight pains in the region of the chest, which she never had felt until then. Prescription: continue the same means, the white looch.

"From the 30th March to the 15th April, the expectoration became easier and more abundant; its form was no longer *arrondie*, as it was five days before, but more homogeneous. It began to diffuse a mousy or musty odour, a characteristic, as I have always considered it, of the formation of tubercles. The want of appetite, the thirst, the fever, and the nocturnal perspiration, still remain, and seem even to increase. The patient also became visibly thinner, and began already to think herself incurable. The application of the stethoscope to the anterior superior part of the left region of the chest, now indicates an incipient pectoriloquism, corresponding to the middle of the second rib, and a slight mucous rattle exists in its vicinity. Prescription: blister to the left arm; warm aqueous fumigations by the mouth. Continue to use the means as before.

"From the 15th to the 30th April, the pectoriloquism increased, and became more extensive. On applying the stethoscope or ear to the affected part, a bubbling noise was perceived, produced evidently

by a motion communicated by breathing to matter contained in a cavity formed in the left region of the thorax.

"That this cavity existed was incontestably proved by percussion on the chest, which gave a hollow sound in that situation, as also by the nature of the expectoration, and the peculiar manner of its ejection, even if the pectoriloquism and the bubbling sound, before mentioned, could leave any doubt on the subject. The matter expectorated is at present decidedly purulent and fœtid, more abundant, of a flatted form, and brought up, particularly in the morning, with a degree of ease, known only to those who have vomicæ communicating with a large bronchial canal.

"The fear of incurring those consecutive misfortunes which always attend the absorption of a portion of the matter contained in an open vomica, and the desire of destroying the strong and fœtid smell which affected the breath and sweats of my patient, I determined to have recourse to the chlorides, which possess, as every body knows, the property of arresting the decomposition of animal substances, and of restoring to pus the good qualities of which it is deprived by remaining in a deep seated cavity in contact with air.

"It was, I confess, with a two fold idea, rather than with an expectation of its being directly useful to my patient, that I advised a trial of it, by adding to the water used in her fumigations morning and evening, a pinch of chloride of lime, and to breathe the vapour thus medicated, for three or four minutes at a time. My advice was followed, and when I paid my patient a visit, five or six days afterwards, she informed me, with an appearance of satisfaction difficult to describe, that the expectoration and perspirations were less, and no longer diffused the least unpleasant smell.

"A result thus quick and efficacious, induced me to increase the number of fumigations, not that I had as yet the least idea that they would ever effect a cure, but with the sole intention of exciting a slight cough, and thus preventing the matter secreted by the sides of the vomicæ, remaining too long in their contact. This was the 10th of May, and from this day forward the fumigations were increased from two to three per diem; but on the 15th, the chest becoming painful, the oppression, as also the fever being increased, we were under the necessity of suspending them until the 20th, and of confining ourselves to the use of other means. During this short intermission, the expectoration, though less abundant, took again its bad qualities, which, with the disappearance of those symptoms which had at first induced us to suspend the fumigations, now determined us again to have recourse to them, beginning with one in the evening of two minutes' duration.

"On the 25th we increased them to two. On the 30th the patient was not at all inconvenienced by her fumigations; on the contrary, her expectoration was less abundant; of a better character; her nights were more tranquil; the fever and perspirations were

sensibly diminished; the strength and appetite were increased; the pectoriloquism became more circumscribed. Prescription: go on as before. On the 10th of June the patient was attacked with a violent colic, similar, as she said, to what she had formerly experienced at each period of menstruation. During the night of the11th the menses appeared, in the morning of the same day the patient was calm and cheerful; she slept part of the night, and awoke in the morning free from perspiration; the pulse indicates but little fever, the expectoration is almost entirely mucous, white, inodorous, and insipid, the pectoriloquism scarcely exists, and that portion of the lungs which two months ago was consolidated, is becoming permeable to air; the courses are abundant. Continues the same prescription. The 15th, menses have ceased only yesterday, and although the patient has lost much blood, she is stronger to day, more cheerful, and her complexion is clearer than before. The cough has almost ceased, and it is only every now and then that the patient expectorates a matter entirely of a mucous character; her strength, appetite, and embonpoint rapidly increase; her nights are good; there is no fever; the perspirations have ceased. Prescription: issue to the left arm, suspend the chlorine fumigations, a drind of Iceland moss, milk, and fruits. The 25th, increase of cough, respiration free, the lung is permeable to air throughout, at least all but a very small part corresponding to the middle of the second rib, which I look upon as the cicatrix left by the obliteration of the vomicæ. Continue the same regimen. The issue still continues open; from this time her strength and embonpoint increase rapidly; the menses keep their regular time of appearance. In the month of October, namely, three months and a half after her cure, Mademoiselle Wick was married; her change of life did not however at all affect her health, so far from it, she is become pregnant, and is brought to bed in due time of a fine child. Neither her pregnancy, nor her lying in, occasioned any dereliction from health, so that I think myself fully authorised to consider her cure complete and permanent.

"*Reflections.*—This case needs no comment to show the good effects of chlorine, as evolved from chloride of lime, as it is in effect of the same nature as those which demonstrate in an incontestable manner the efficacy of any therapeutic agent. Mademoiselle Wick takes cold during the winter of 1826; she neglects it at first, hoping that it might end like those she had had for ten consecutive winters. But this time, whether it was that the bronchial inflammation rose higher, in consequence of the frequent recurrence of the same morbid phenomenon, or whether it was that the natural predisposition she received from her mother found a more favourable opportunity of developing itself, the malady did not as before confine itself to the mucous surface of the bronchiæ; it passed these limits, and invaded the parenchyma of the lungs, a considerable consolidation results, hœmoptysis, fever, menstrual suppression, and the develop-

ment of a greater or less number of tubercles, awakened at last the attention of the patient; but when I was called in five months had elapsed, and consumption was manifestly present. Too unhappily convinced, that when the affection of the chest has arrived to this degree, it is almost universally beyond the reach of art, I confined myself in the first instance to the use of palliative means. I had at once recourse to leeches, with the view of diminishing the extensive consolidation I had to encounter; but this, far from relieving the patient, seemed rather to add fresh impulse to the activity of the disease. Thus it was easy to conclude, that from this period the tubercles were softening, that in fact the suppurative process had commenced; lastly, that the disease had proceeded to the third stage. What gave us the greatest confidence in the opinion, was the nature of the expectoration, the increase of febrile symptoms, and lastly, the indications of the stethoscope and percussion. The vomicæ having been formed and now burst, the state of Mademoiselle Wick became more critical, in consequence of the air in contact with the suppurating membranes vitiating their secreted products. Thus it was that in a few days afterwards the expectorated matter, until then puriform, became purulent; that the odour of must or mice which it had at first, changed to fœtid; that the fever and colliquative sweats which terminated the febrile paroxysm also increased. It was at the same time that the want of appetite, the thirst, the marasmus, and lastly, all the terrible symptoms which characterize phthisis advanced to the third stage, proceeded with rapid strides. Now I ask what would have been the end of such a malady without the beneficial effects of chlorine? The answer is not a doubtful one, at least in my estimation. It may, indeed, be objected, that Bayle, Laennec, M. M. Cayol, and Rullier have witnessed the spontaneous healing of vomicæ; granted; but in the case of spontaneous cure, the vomicæ were almost constantly produced by acute inflammation, caused frequently by a blow or fall on the chest, in persons strong, of good stamina, and free from any predisposition. Here, on the contrary, the vomicæ were the result of the suppuration of a portion of the lung slowly consolidated, produced by an internal cause, and consequent upon predisposition. What a striking difference !!!

"In the greater part of the instances of spontaneous healing of vomicæ, found in authors, or collected from private sources, nature has had all the credit of the cure: art did scarcely any thing. Here, on the contrary, art has done every thing. Nature would evidently have been powerless without the agency of the chloride of lime; it is to it, and to it only, that we owe the happiness of being able to publish this interesting case. It was the employment of the chloride of lime which ameliorated the deadly qualities of the expectoration. It is it which enabled the ulcerated sides of the vomicæ to form healthy pus. Again, it is this agent, that, by provoking a slight

cough, favoured the expulsion of the matter contained in their cavity, and prevented its accumulation. Lastly, it is to this two-fold effect that we owe the rare happiness of seeing the sides of the vomicæ contract themselves, approach each other, collapse, and thus obliterate a cavity that would infallibly have been the cause of the death of Mademoiselle Wick.

"This interesting case attests, in common with many others, the eminent blessings that chemistry has conferred on mankind, by discovering to us the chlorides, which have already rendered so many and so great services to humanity, and which, perhaps, as far as man is concerned, is destined to become a powerful and efficient means for the preservation of his health."

Having now introduced the requisite data to enable them to form a correct judgment respecting the probable utility of medical inhalations, our readers can hereafter, on fitting occasions, have recourse to the practice in the case of their own patients with a greater chance of success.

QUARTERLY SUMMARY

OF

MEDICAL AND SURGICAL INTELLIGENCE.

I. ANATOMY.

1. *Total absence of the Iris.*—An account is given in the *Archives* of an observation made by Dr Stoeber of Strasburg; it is as follows:—Pierre Muller, born in March 1830, healthy and strong, exhibits no other faulty structure than that of his eyes. Externally the eyes appear to be well formed, but on looking into them no iris can be discovered. The pupil, which looks black, is as large as the cornea. When the light strikes them in a certain direction, the pupils are of a blood red colour, or like two balls of fire. The child enjoys the sense of sight, notwithstanding this rare privation of a most important organ. Notices of several cases observed by one of the older and several modern writers are appended to the paragraph from which we take the above.—*Archives, March* 1831.

2. *A case of imperfect brain.*—M. Magendie announced, at a late sitting of the Royal Academy, that M. Combette, resident pupil at the Orphan's hospital, had deposited in his laboratory the encephalon of a girl ten years old, who died from excessive masturbation. This brain possesses no trace either of cerebellum or pons varolii, a circumstance which must produce no little disturbance in some of the physiological systems.—*Ib.*

II. PHYSIOLOGY.

3. *On the circumstances which affect the frequency of the pulse in health.*—In the year 1823, the Faculty of Medicine of Tubingen offered a premium for an Essay upon this interesting subject, and M. G. H. Nick gained it. His observations are noticed in the *Archives Generales* for May, of the present year, and we are indebted to that excellent journal for what we now lay before our readers from Mr Nick's Essay.

When no particular cause has acted upon the individual during the preceding night, the pulse is found to be most frequent in the morning: it diminishes a little in the course of the day, but only when the person continues to lie down, and remains free through the whole day from all external causes of excitement.

The variations in the pulse which have been referred by physiologists to a diurnal revolution, are for the most part the results of accidental circumstances, such as the taking of food, occupations, the position of the body, &c.

The pulse does not undergo any change about noon, notwithstanding that Cullen and M. Double have asserted the contrary to be the case: it only seems to be rather harder in the morning than it is in the evening.

Among the causes that affect the frequency of the pulse, the most common are food, and the temperature at which it is taken. A piece of bread eaten in the

morning, in bed, increases the pulse two or three strokes in a minute; cold meat produces the same effect; but if it be taken with vinegar, either the pulse is not increased, or it is actually lessened in frequency. The same thing is observed after the ingestion of curdled milk or fruits. But if food be taken somewhat warm, the pulsations are immediately augmented to the extent of four or six beats a minute. Eight or ten spoonfuls of very hot soup increases the pulsation nine or ten a minute. At a common meal, the broths accelerate the pulse, boiled meats keep it at the same rate, and the vegetables with which a meal is generally terminated, also occasion a slight acceleration; thus it may be said in general, that by an ordinary dinner, the pulsations are augmented about ten or twelve strokes beyond the natural rythm. This acceleration, which is well marked, is kept up during the first two or three hours after the meal, according as the food is more or less easy of digestion; afterwards it diminishes, and in about five hours has completly disappeared.

If we lie down after a meal, the pulse returns much more speedily to its natural condition; but on the contrary, if we walk about or merely keep on foot, the acceleration becomes somewhat greater than as above stated, but the accelerated condition does not continue any longer than in the other case. When we eat cold meat, the acceleration does not commence until a quarter or even half an hour has elapsed, and this frequency is always proportioned to the consistence and quantity of the aliment ingested.

When, after eating meat, we drink a glass or two of cold water, or light wine, the pulse loses from one to four of the strokes which it had acquired from taking the soup; but this effect lasts only a quarter or half an hour.

Cool water taken repeatedly and in small quantities has no influence on the pulse, but in large quantities it makes it from two to four strokes a minute less. Cool beer at first acts like water, but the retardation of the pulse does not continue so long. Hot tea increases it from six to twelve a minute.

Upon inquiring into the effects produced upon the pulse by sleep, M. Nick found that it was diminished, and more so if sleep took place with the stomach empty than if food had been taken just before it. The pulse is slowest from midnight to two o'clock; it does not alter any when we are going to sleep, but becomes one or two beats less as we awake; but if we wake up startled, the beats are increased from five to fifteen a minute.

We shall not, for want of space, repeat what M. Nick observes in relation to exercise, baths, evacuations, &c., for which we refer the curious reader to the *Archives* for May 1831.

4. *Effects of certain substances when applied to the brain.*—M. Flourens read to the Royal Institute, Feb. 7, an account of some experiments lately performed with a view to learn what would be the effects of certain medicines applied directly to the surface of the brain. Our readers are acquainted with his experiments upon the ablation, as he calls it, of successive portions of the brain. 1. Having exposed the cerebral lobes in a rabbit, by removing the cranium and dura mater, M. Flourens applied some oil of turpentine to them. At first no effect was produced upon the animal; it continued to move about as usual. After some time, the turpentine, which was frequently applied, began to act, and the animal became agitated; it next appeared to be in a fixed and immovable attitude. After a still farther lapse of time, these phenomena became much more considerable. Sometimes the animal darted forward, at others it would turn round with extreme rapidity, and then become completely motionless; it had grinding of the teeth; its head trembled, and it often cried out; it might have been said to labour under a paroxysm of furious mania. While at rest, or motionless, the animal both saw and heard, but when in its frenzied fit, it neither saw nor heard, and would strike against any thing in its way, while darting forwards or turning round as above mentioned. It is evident that these phenomena are attributable to the increased influence of the cerebral lobes upon the rest of the economy. 2. Having exposed the cerebellum of a rabbit, M. Flourens applied some oil of turpentine to it. The animal not long afterwards began to run and

jump about with great agility, alternating these exertions with intervals of repose; the mobility became more and more frequent in consequence of reiterated applications of the oil of turpentine. The animal could see and hear, and was in possession of all its faculties. 3. Laudanum was applied to the cerebral lobes of a rabbit, and, as in the former instance, the application was repeated, at first, until the effects of the medicine appeared, and afterwards until those effects reached their highest degree of intensity. The animal now became so motionless, that neither pricking it, nor any other means resorted to, could induce it to change its attitude in the least; it had grinding of the teeth, and the whole body was agitated. Its head and the fore parts of the body were frequently bent backwards so much as to make it turn over on its back, when it would soon get up and keep perfectly motionless until another fit of agitation came on to cause it to repeat these motions. 4. The application of laudanum to the cerebellum of another rabbit, occasioned it to walk with extreme difficulty; it never ran; while walking it dragged itself along as if lying on its belly. 5. The difference in the action excited by turpentine and laudanum was therefore complete; the turpentine increased the locomotive powers while the laudanum produced a great torpor in them. When applied to the cerebrum, the turpentine occasioned the animal to dart forwards with rapidity, while the laudanum caused it to be retracted, and bent backwards so as to make it tumble over on its back. 6. M. Flourens applied laudanum to the cerebral lobes of a rabbit, and when the retraction and *immobility*, were at their height, he substituted oil of turpentine for laudanum. In a short time afterwards the immobility was not so complete, the animal took a few steps and then began to run; and although the immobility returned from time to time, the oil of turpentine evidently modified the action of the opium, and to a certain degree inverted the phenomena. 7. The effect of alcohol applied to the cerebrum and cerebellum was similar to, but less intense than that of spirit of turpentine.

As in M. F.'s former experiments upon ablation of successive portions of the brain, and the introduction of certain substances into the digestive organs, he found that the functions could be abolished or excited at pleasure; so the same results were obtained in these new experiments. Sometimes the function is excited, sometimes diminished. Thus, opium applied to the cerebral lobes abolishes their influence upon the rest of the economy, in the same way as gradual ablation of them is found to do, while turpentine, on the contrary, increases this influence.

These results, it is thought, may be advantageously applied to the management of cases of disordered mind, when it may be needful to augment or lessen the influence of the brain upon the economy.—*Rev. Med. March* 1831.

III. PATHOLOGY.

5. *Diseases of the heart.*—From an interesting paper on organic affections of the heart, by R. Wade, Esq. Surgeon, contained in the London Medical and *Physical Journal* for June 1831, we select the following.

Pericarditis, with inflammation of the internal membrane of the heart and valves.—Mr Juno, a stout man, aged 40 years, eighteen months ago was first attacked with dyspnœa and palpitations, which graduaHy subsided and left him apparently quite well until about six weeks ago, when his former symptoms returned. He complains now of constant pain at the scorbiculus cordis, extending to the left shoulder and elbow, and occasionally as far as the wrist: the pain he compares to the gnawing of a dog; he has also a sharp pain in the throat, as if some one were cutting it, with severe fits of coughing. The slightest exertion brings on intense suffering, beginning with a fluttering sensation in the region of the heart; the forehead becomes bedewed with perspiration, and the pulse small, quick, and jarring. The symptoms gradually augmented, when, about three months from the com-

mencement of his present attack he was bled to 20 ounces, during one of the paroxysms of dyspnœa, &c.; much relief was obtained for a few minutes, but the patient complained of feeling very faint; in less than half an hour syncope occurred, from which he was not recovered. *Autopsy.* The pericardium had patches of lymph, both on its external and internal surfaces: it contained three ounces of bloody serum; the lining membrane of the right auricle was of a black colour, which extended to some distance along the venæ cavæ; the tricuspid and mitral valves were also of a dark colour and disorganized texture, forming a striking contrast to the healthy appearance of the ventricles; the aortal valves were much thickened; the lining membrane of the aorta was of a deep crimson, and generally spotted with osseous spiculæ to its curvature. No other marks of disease were observed.

Active dilatation of the left ventricle; passive of the right, and gangrene of the aortal valves.—A stout man, 42 years old, of temperate habits, had an attack of inflammation in the chest nine months before his death; the pain, which in the early stage of the disease was acute, and chiefly confined to the left side of the chest, had latterly, in a great degree, subsided; but he has, during the complaint, been constantly subject to dyspnœa and cough; the pulse was generally rather small, quick, and jarring. The patient complained constantly of an uneasy sensation in the region of the heart, with occasional palpitations; the action of the heart was very laboured. The patient was tapped for ascites two months previous to his death, after which a most harassing diarrhœa occurred, which soon exhausted him and caused his speedy death. *Autopsy.* The lungs, which adhered firmly on both sides to the pleura costalis, were loaded with dark blood, and serum. The right ventricle of the heart was passively dilated to more than double its usual size, its parieties being much attenuated; the left ventricle was actively dilated, its parieties in some parts measuring an inch and three-quarters in thickness. The mitral and aortal valves resembled parchment, and in one of the latter was a gangrenous spot as large as a pea, quite black, and of a disorganized texture; the other two were covered with warty excrescences, very similar to those often observed upon the glans penis. No other marks of disease were evident.

Passive dilatation of the right ventricle; both active and passive of the left, and extensive adipose depositions under the internal arterial tunic.—Stephen Miles, 50 years old, well formed, of temperate habits, by trade a currier. Has generally enjoyed good health, but has been subject for the last twenty years to an ulcer on the right inner ancle, which has seldom been healed any length of time; he has also experienced for the last year some degree of dyspnœa and palpitation after any uncommon exertion. August 25th 1830. Nine weeks ago, with no other premonitory symptoms, the patient awoke in the night with extreme difficulty of breathing and pain in the chest, which caused him to sit upright, and he has never since been able to bear a recumbent position for any length of time. The paroxysms of pain and dyspnœa are frequently so severe as to cause him to start up and rush across his room in a state of distraction; to relieve his sense of suffocation he is anxious to have all the windows and doors thrown open; a constant burning pain and throbbing are felt at the scorbiculus cordis, and the ensiform cartilage is forcibly elevated at every stroke of the heart. These paroxysms usually endure from three to four hours, when the urine, which is deficient and high coloured, is passed involuntarily. For a fortnight after the first paroxysm the man was able to pursue his usual employment; in a month the lower extremities became œdematous. The most ease is experienced when he sits with his elbows resting upon a table, and his head reclining forwards and supported by his hands: the pulse is small, frequent, regular, and vibrating; respiration short and anxious; there is extreme tenderness and strong pulsation at the scorbiculous cordis; the bowels are constipated; the fœces of a pale yellow colour; the surface of the body is cold, and the lower extremities, as high as Poupart's ligament, are enormously distended with serum; a constant and most distressing flatulence is experienced, and any thing taken into the stomach causes so much pain, that it is difficult to persuade the patient to eat. A short,

hacking cough, with little expectoration, has been present from the commencement of the disease; the tongue is very red; occasional nausea but no vomiting is experienced. Death took place suddenly two days after the patient was first seen by Mr Wade. *Autopsy*, four hours after death. The muscles generally small and flabby; the deposition of adeps unusually great; the inferior extremities much distended with serum, and on the right inner ancle an ulcer, surrounded to some extent by a purple discoloration of the skin. The heart was excessively enlarged; the pericardium had its vessels, in several parts, minutely injected, and contained an ounce of serum; the right auricle and ventricle were passively enlarged to twice their usual size; the tricuspid valve had lost its transparency; the left ventricle was both actively and passively dilated; the left cavities of the heart were empty, but the right were distended with coagulated blood. The commencement of the aorta and pulmonary arteries was very much dilated. The internal membrane of the arteries was extensively diseased, in some few places by the atheromatous deposit, but chiefly from a deposition of fat immediately beneath it. The disease extended beyond the bifurcature of the iliacs; the innominata, subclavian, and carotid arteries were also very generally studded with a similar adipose matter. The brachial artery was examined at the inner edge of the biceps, and found to be in a healthy state, as were also the lungs and pleuræ. The mucous membrane of the stomach was generally of a dark red colour, much softened, and had an ecchymosed appearance, resulting from a minute injection of vessels, and not from extravasation, as is often supposed, as was evident upon examining it with a microscope. The mucous lining of the small intestines was loaded with blood of a dark venous colour, and was much softened. The liver was enlarged and hardened: the pulsations at the scorbiculus cordis were occasioned by the edge of the liver lifting up the ensiform cartilage at every stroke of the enlarged heart.

6. *Hemicrania.*—This disease is now generally considered to be a neuralgia, either continued or intermittent. The appellation neuralgia, however, does not designate the real seat of the disease, and is equally applicable to the painful affection of the face termed *tic douloureux*, or to odontalgia; it is proposed, therefore, by M. Piorry in a memoir upon the disease, contained in the *Journal Universel* for January of the present year, to denominate it sub-orbitary neuralgia. The opinions of this gentleman in regard to the seat of the disease are somewhat novel. He considers it to be a neurosis of the iris; confined, at first, to this membrane, or rather to its nerves; and subsequently extending itself through the various ramifications of the latter. It is characterized by disturbance of vision, followed by pains, either of the eyes or of the surface of the cranium, with nausea and vomiting. Its cause is the too long continued exercise of the eyes required in various professions. M. Piorry supports his opinions by various facts which have come under his notice, particularly by cases of habitual hemicrania, in which the disease has ceased upon the exercise of the eyes being remitted as soon as the affection of the sight peculiar to it was experienced, and others in which a cure was obtained by frictions of extract of belladonna upon the eyelids. M. Broussais, in noticing the memoir of M. Piorry, in the February number of the *Annales*, remarks that the opinions of the latter would be more correct had he added, that the iris may be affected also indirectly from an irritation seated in the stomach in consequence of the sympathy which exists between these parts. This reflected irritation readily explains the frequent production of hemicrania as a consequence of that morbid condition of the stomach denominated indigestion.

7. *Encephaloid Degeneration of an Entire Hemisphere of the Brain.*—This case is related by W. Davidson in the July number of the *Edinburgh Med. and Surg. Journ.* Few of a similar character are to be found upon record. The case is interesting in many points of view, and exhibits in a very striking manner the extent to which disease of the brain may arise before it becomes destructive to life. A man was admitted into the Lancashire hospital on the 17th of September 1830. His body was extremely emaciated; eyes sunk; countenance hollow and

haggard, with a remarkably wild and anxious expression indicative of suffering; complexion cadaverous, and of that peculiar clear straw-yellow colour which denotes the existence of organic disease. He has low muttering delirium and somnolency, accompanied with almost constant moaning and raving; puts out his tongue when asked, and appears more intelligent when roused, but relapses immediately on being left to himself. When asked if he feels pain, he mutters in a hollow tone, "there," placing his hand upon the left side of his head, which feels distinctly hotter than the right; his pulse eighty-four and of good strength. In this state he continued until the 30th of September, taking little food and occasionally sleeping for hours, in a very tranquil manner, when he gradually sunk into complete coma, from which he never recovered. He died on the 3d of October. Of the previous history of this patient nothing could be learnt excepting that he was a blacksmith by trade, almost constantly intoxicated, and that his intellects became impaired about six months ago. *Autopsy*, twenty-four hours after death. On opening the head the dura mater was found adhering to the arachnoid, which latter was opaque and thickened; the pia mater was very vascular and injected; it was infiltrated throughout with serum, and firmly adhered to the cortical substance of the brain. On attempting to remove the latter from the skull, a finger of the operator penetrated into a cavity in the lower part of the middle lobe of the left hemisphere, where it lies in the depression formed by the wings of the sphenoidal and petrous portion of the temporal bones. This cavity proved to be an abscess with undefined and irregular boundaries, much larger than the size of a pigeon's egg, and containing partly yellow purulent matter and partly small detached masses, which appeared to be clots of fibrin. Over the upper portion of this abscess there was a small ash-coloured indurated mass presenting a rugged knotty appearance, having many of the characters of tubercular matter in a crude state. The left hemisphere was diseased in a very extraordinary manner throughout its whole extent; its diseased structure communicating with the cavity of the abscess by a narrow aperture filled with yellow cheesy matter. Some portions o fthe hemisphere, particularly at its centre, consisted of opaque, white, homogeneous matter, rather firmer than healthy brain; others were softer, of a dirty ash-colour, and reduced to a diffluent pulp. The outer portions were more consistent, of a fleshy colour, and containing minute bloody points, and delicate red lines, converging like radii to a centre, and alternating with whitish parallel filamentous bands similarly radiated. This singular structure was imperceptibly lost in the diseased mass internally, and except in the immediate neighbourhood of the abscess, was separated from the surrounding healthy medullary substance by a well defined circle of the latter, in a state of complete softening—resembling both in colour and consistence broken down coagulated milk. This circle again was bounded above and externally by the surface of the convolutions, below by the pia mater (the cortical substance there being also softened) and by the abscess, and internally by a thin portion of the hemisphere in a sound state, and by the outer walls of the lateral ventricle.* The serous lining of this ventricle was partially coated with a delicate albuminous false membrane, under which it was rough and uneven, presenting an appearance of high vascularity and thickening, the vessels of the striated body ramifying beautifully over its surface, as if artificially injected. The fornix, walls, floor and posterior horn of the ventricle, and the left hippocamus major, showed considerable capillary injection, and were of much greater consistence than natural. The superficial cortical substance of both sides was remarkably firm, minutely injected, of a bright red colour, and adherent throughout to the pia mater. The right ventricle was nearly in a natural state. The pia mater in the immediate vicinity of the abcess was destroyed by ulceration, and the dura mater was spongy and perforated, like a seive, by innumerable small holes, under which the internal table of the scull had suffered from caries. All the viscera of the thorax and abdomen were healthy, excepting the liver, which was greatly en-

* The whole hemisphere became converted into a semifluid pulp, mixed with portions of a wine-lee colour, by a night's exposure to the air.

larged, and adhered to the diaphragm and stomach by loose cellular bands. When cut into, it presented that particular form of disease denominated pale induration with enlargement.

8. *Hysteria.*—We copy the following cases from the *London Medical and Physical Journal* for July 1831. They are reported by Dr Darwall, of Birmingham, with the following introductory remarks.

"That many of those anomalous symptoms which have been comprehended under the title of hysteria depend essentially upon some affection of the brain and spinal medulla, seems now to be generally acknowledged. It is not, however, very frequently that such evidence can be obtained of the correctness of this opinion as the two following cases afford. In both, there was manifest affection of the spine: in both, symptoms were present which are commonly known as nervous; and in both, the latter disappeared as the former affection diminished."

A lad fourteen years of age complained, January 10, 1831, of dizziness, pain across the forehead, noise in the ear, coming on suddenly and preventing his hearing; dyspnœa; palpitation of the heart; no particular sound with the stethoscope; much tenderness over the region of the heart, and over the left side; spirits very variable, at times exceedingly low; pulse small. Spine much curved to the right side. Great tenderness over the seventh and eight dorsal vertebræ. Bowels costive; urine natural; appetite good. Has been unwell for the last twelve months, and always felt very giddy at night. Twelve leeches were directed to the tender part of the spine, and a purge of cal. and rhubarb. The reclining posture to be preserved by the patient without any intermission longer than half an hour at a time, nor more than two hours during the whole day. To walk out daily. (?) Jan. 13. Has had less palpitation at the heart. Still tenderness of the spine and at a spot between the heart and clavicle; pressure here excites the heart's action, although respiration is very strong beneath. No cough. The calomel had brought away much offensive dark coloured feces. He was directed an infusion of colomba, gentian and senna āā half an ounce, and five grains of the blue mass every other night. On the 3d of February, dyspnœa much the same. Scarcely any palpitation or dizziness since the former date. No tenderness over the heart. Bowels open; appetite good; spirits more equable. Spine not so much distorted; the eleventh dorsal vertebræ much more depressed, however, than the rest, and tender, as is also the twelfth. A blister was directed to the dorsal portion of the spine. March 10. In every respect better. Curvature of the spine nearly gone. Medicines as before. April 8. Says he is quite well; has no palpitation excepting after considerable exercise; scarcely any curvature of spine.

A female 21 years old, an attendant in a shop. Feb. 15, 1831. Has headach, giddiness, tinnitus aurium, palpitation of the heart, and dyspnœa, but not commonly any cough; flatulence after eating; is low spirited. Her bowels are costive, being sometimes three and four days without evacuation. Catamenia regular in time, but last only two days, and are very black and painful. Slight leucorrhœa, urine hysterical, at times very scanty and turbid, at others very copious and limpid. Pain over the region of the heart, with considerable tenderness to the touch. The spine curved laterally. Tongue reddish and dry in the morning. Pulse small and rapid. No tenderness of spine. The latter has been curved four or five years, and the other symptoms have been experienced during the last twelve months. Respiration with the stethoscope perfectly natural. Directed to retain the recumbent posture with intervals not extending beyond half an hour; to walk out daily; mercurial purgative with infusion of columba and the aromatic spirits of ammonia. 22d. Patient thinks herself better; symptoms still present, though perhaps in a less degree. Bowels open twice a day; evacuations very offensive; catamenia occurred this morning, but without pain, and less black than usual. Same remedies. March 1. Better generally; has had much less pain at the heart and less tenderness; tongue cleaner; less leucorrhœa; pulse 84; much less palpitation. Same remedies. 8th. Still better. Less swelled after

eating; bowels open, evacuations dark coloured and offensive. Tenderness over the heart quite gone. Directed comp. decoct. aloes with infusion of camomile and cascarilla aa half an ounce three times a day, with five grs. blue mass every second night. 15th. In every respect better; evacuations rather scanty, still dark coloured and offensive. Considerable flatulence; appetite better; pulse 84, not so easily hurried; curvature of the spine less. Same remedies. 22d. The catamenia have been present, only lasting one day, and very scanty, black and painful. Bowels moved every second day; appetite good. This morning considerable palpitation of the heart, with irregular pulse; spirits very low; much tenderness over the seventh dorsal vertebra. Directed twelve leeches to the painful vertebra; purge of sulph. magnesia. 25th. Has had very little palpitation since last date; spirits better; bowels open twice or three times a day; pulse 92, regular; no tenderness in the spine; appetite good. Same remedies. 29th. Breathing still difficult, but only when moving. Says she is much better; has no giddiness, headach, nor noise in the ears; palpitation only when she walks; bowels opened by the pills, but not otherwise. Same remedies. This patient still remains under treatment; the spine, though still very much curved, is far less so than at first. It will probably, from the length of time its duration has continued, never entirely recover its proper direction. It is, however, worthy of remark, that while in the first case, every symptom disappeared with the return of the spine to its natural state, and when the tenderness and palpitation were lessened by leeches to the painful vertebra; in the latter, one of the vertebræ became tender at the very time there was an aggravation of the general symptoms, which were, as in the first case, relieved by local depletion.

9. *Mastodynia.*—The dependence of muscular pains, occasionally, upon an affection of the nerves at their roots, has not elicited such general attention as might have been expected, since the appearance of Mr Teale's views on this subject. The following cases obtained from the same source as the two preceding, are additional evidence of the correctness of this gentleman's opinions.

Mrs Mascall, aged 25 years, has suffered very severely for a year with pain in the breast, but there was neither tumor nor hardness. There was much tenderness in the superior dorsal vertebræ. Dr Darwall first saw her on the 14th of January, when he directed her an aperient. On the 17th she returned; the medicine had operated well, but she experienced no relief in the breast. She was ordered to be cupped over the painful vertebræ, which was done the same day: the pain was relieved during the cupping, and she has had scarcely any pain since. Various dyspeptic symptoms under which she laboured, are also much relieved. February. Has had no return of pain in the breast: has not been so free from pain for twelve months. Convalescent. No subsequent return of the symptoms.

April 1, 1830. Mrs Norton. Has had pain in the breast for four months, with distinct tenderness in the fourth dorsal vetebra. A blister was applied to the spine, and the pain ceased immediately after it rose; four days subsequently she was entirely free from pain. Dr Darwall saw this patient after the lapse of some weeks; she had had no return of the symptoms. The Doctor states that he has under his care, at the date of this communication, another case, the subject of which is a servant girl who had suffered from mastodynia for several months. There was considerable tenderness in the fifth and sixth dorsal vertebræ, to which part eighteen leeches were applied. The pain in the breast ceased for several days, but had within a few days again returned, in consequence of which she remained under treatment.

10. *Insidious form of puerperal fever.*—A paper on this subject is contained in the *Bibliothèque Médicale*, for December last, by M. Le Gallois, which it was our intention to notice in a former number—not so much from the novelty of the case which is detailed, but from its bearing upon the question of the connexion between the periodicity of morbid phenomena and inflammation. In the month of August 1828, M. Le Gallois was requested to visit at Charenton

a female who had been recently delivered. Her labour had been without any thing remarkable; but subsequently she experienced every evening an exacerbation of fever preceded by a chill. Excepting this, her case presented no symptoms of any moment. The periodical return of the fever, and its being ushered in by a chill, induced M. Le Gallois to believe her labouring under an attack of intermittent fever, especially as this disease was then epidemic at Charenton. He in consequence directed her the use of sulphate of quinia, at first in the dose of six grains, the quantity being subsequently augmented. The disease, however, increased; signs of intestinal irritation became manifest; peritonitis succeeded, and finally the patient died. M. Le Gallois believes that the fatal termination of this case was due to the treatment he had prescribed. Of this we think there can be little doubt. We have ourselves seen several cases of peritonitis, which in their earlier stages presented no other symptoms than chills and fever, returning at regular intervals, but which soon gave place on the exhibition of bark and other tonics to intense pain, tenderness and swelling of the abdomen, profuse sweats, &c. followed in a very short time by death. M. Le Gallois, does not believe, however, that puerperal fever is the effect of peritonitis, but that it results from the infection of the blood by a particular morbid principle—the lochia in a purulent condition. This opinion he has explained and developed in a memoir presented to the Royal Academy of Medicine of Paris. In evidence of its truth he alleges that in cases of puerperal fever pus has been found in the veins. This, however, is certainly placing effect for cause. That in most cases puerperal fever depends upon peritoneal inflammation, we have, we conceive, the most conclusive evidence; that it does not in all, we admit; an irritation of any organ is, we conceive, as capable of producing fever during the puerperal state as at another period.

11. *General inflammation of the arteries.*—The existence of acute arteritis is disputed by many. The following case, which appears to be of that character, deserves to be generally known, in order that in parallel instances the attention of pathologists may be directed to the state of the arterial system. It is copied from the *Journal Universel* for April 1831.

A negro, 28 years old, came under the care of M. Serres, in consequence of a painful swelling of the left testicle, which gave way to leeches and fomentations. Two or three days subsequently he complained of considerable difficulty and frequency of respiration, and some expectoration stained with blood; his pulse was very frequent and small. It was stated that he had been delirous the preceding evening. The stethoscope evinced feeble and embarrassed respiration, but did not indicate whether this arose from pneumonia or pleurisy, or acute tubercular inflammation. He passed a restless night, and next morning was worse. His short laborious breathing seemed to indicate severe pulmonary disease; auscultation, nevertheless, gave only negative signs. The feebleness of the pulse had increased, and it was still very frequent. As on the preceding day, the diagnosis being obscure, the physician merely prescribed low diet and cooling drinks. On the third morning the patient was threatened with suffocation. Various sounds, as sibilant rattle and sonorous rattle, were heard in the chest; but neither crepitating rattle nor bronchial respiration; neither was there any dulness on percussion. The radial artery had ceased to beat. The effect of venesection was tried, and two ounces of blood were obtained with difficulty; in twenty minutes the patient expired, with no other symptom than hurried and difficult breathing, and frequent feeble pulse. The tongue was natural in appearance from first to last. *Autopsy*, 40 hours after death. The weather in the interval frosty. There was no rigidity. A good deal of bloody serum was discovered in the lungs, and at their summit there was an intense red coloration; but the air penetrated them with facility. They were free from tubercles. The bronchial membrane was red. Each cavity of the heart contained a moderate quantity of blood. The lining membrane was of a livid red colour, particularly near the aortic valves; and this colour was also observed in a part of the muscular texture of the parieties. The

red discoloration extended into the aorta and pulmonary arteries. In the aorta, as far as its division into the iliac arteries, the colour of the inner coat was carmine red, its surface not glistening but dull; it could be easily detached from the middle coat, and in this coat arteries were seen injected with scarlet blood. The iliac, the femoral and tibial arteries presented the same colour, but the tint was deeper; the common carotids and subclavians were in the same state; but in none of these vessels the membrane had lost its firmness of texture. The temporal artery was natural. In the inferior vena cava there was also some discoloration, but much more faint. The head was not opened, as the bones were preserved to make a skeleton. The relator of this case, Mr Camus, insists that it is a genuine instance of acute arteritis, and that this is proved by the redness of the inner coat of the arteries existing without blood in them to account for the colour on the principle of imbibition after death, and by the redness being accompanied by softening of the texture of the inner coat. Although this case is certainly a more marked one of acute arteritis than we recollect to have seen recorded, yet it may still admit of some doubt whether this was its actual character. The dying of the inner coat of the arteries may have been occasioned by fluid blood in the vessels immediately after death, the blood afterwards passing into the veins, and notwithstanding the weather is stated to have been cold, the interval which occurred between death and the examination was such as to render equivocal the real cause of the softening of the inner coat—whether it resulted from preceding inflammation, or was merely a cadaveric phenomenon.

12. *Plica affecting the hair on the pubes.*—A curious case of that peculiar morbid condition of the hair denominated plica, was related by M. Ozanam to the Royal Academy of Medicine of Paris at its session in January 1831. It occurred in a married female aged 25 years. The mons veneris was covered with an enormous tuft of very long and coarse hair, and so completely entangled that coition was rendered impracticable. The husband was desirous on the first night of his marriage to remove this barrier to his enjoyment by cutting off the hair with a pair of scissors, but the pain caused by the first attempt to remove, in this manner, the matted hair, as well as the discharge of blood from its cut ends, forced him to desist. M. Ozanam was called in, and directed sulphurous baths and frictions with the mercurial ointment, but these were productive of no good effect. He succeeded in removing the diseased hair, however, by the use of the depilatory paste employed by the people of the east, termed *rusma*, and composed of the yellow sulphuret of arsenic, the sulphate of copper, lime, soap and water. After this he caused the parts to be anointed with a paste composed of the sulphuret of potash, chloruret of lime, animal charcoal and lard. According to M. O. tenia may be successfully treated in the same way.

13. *Pleuro-pneumonia not evinced by stethoscopic signs, but which were detected by mediate precussion.*—A young man was received into the Hotel Dieu with cough, hurried respiration, but without any rattle or particular resonance of the voice being detected by the stethoscope. Percussion by the pleximiter evidenced a difference of sound to the left and posteriorly. This, in some measure, disappeared when the patient was placed on his abdomen. The disease was pronounced to be pneumonia, and was removed by an antiphlogistic treatment. M. Laberge, who relates this case in the *Journal Hebdomidaire*, is of opinion that tubercles may be detected by percussion, when no indication of them can be obtained by the stethoscope.

IV. THERAPEUTICS.

14. We are indebted for the following interesting cases to Dr Clark, to whom they were addressed by his relative, Aug. H. Clark, M.D., of New Orleans.

"The profession is indebted to Mr Teale for a valuable and highly important

improvement in a class of diseases which has often baffled its efforts, and even brought it in a measure into disrepute. I allude to the neuralgic affections, which Mr T. informs us depend upon irritation of the spinal chord and sympathetic ganglia; and remedies directed to the removal of the latter are found to be attended with the happiest results. These observations are in a measure confirmed by the result of two cases which lately fell under my care, and which I beg leave to detail to you, requesting, at the same time, that, in the event of your approval, you will cause them to be inserted in the North American Medical and Surgical Journal.

Case 1. *Neuralgia of the bowels.*—On the night of the 23d January I was called to George N., a coach driver, aged about forty years, afflicted with violent colic, under which he had been suffering for the last two days, during which time a variety of domestic remedies (chiefly opiates) had been administered, but without the slightest relief. Before I was sent for a paroxysm of uncommon severity had seized him, and I found him complaining of agonizing pain in the back, shooting up into the bowels, extending even into the thorax, and producing at times very considerable dyspnœa. On making pressure on the abdomen, the part immediately beneath the hand was relieved, but the pain appeared to accumulate in some other part of the belly. His pulse was considerably excited, tongue furred, and bowels constipated. He attributes this attack to exposure to cold and wet a few days since, during a drive of some miles. Has been subject, however, to attacks of colic for the last three or four years.

Recipe.—Venesect. 16 oz. and a dose of castor oil, with fomentations of hot vinegar and water throughout the night.

24th. Passed a restless night. Medicine operated scantily. Fever shaken, but the only symptom relieved is the dyspnœa.

Recipe.—Calomel 10 grs.; Pulv. Rhei 15 grs.; a large sinapism to abdomen, and drinks of lime mucilage and balm tea.

Evening. Symptoms nearly the same. Notwithstanding the free operation of medicine, the sinapism relieved him for a time, but complains of increasing pain in back. It now occurred to me that this was a case of irritation of the spine, in consequence of which I examined his back in the manner directed by Teale. On pressing the parts opposite the lower dorsal and upper lumbar vertebræ, the patient flinched, and cried out "that was the spot." He then informed me that about three years since, while employed in a cotton press, a bale of cotton fell against his back; since which time he has been subject to attacks of colic on exposure. Does not recollect ever having suffered from them before the receipt of the injury. The treatment now was plain.

A blister was applied to the small of the back, and directed to be kept on at night.

25th. Visited him this morning and found him sitting up, free from pain, but yet complaining of soreness, which however does not at all incommode him. Informed me that so soon as the blister began to draw the pain subsided.

Recipe.—Advised the blistered part to be kept open with savin oint. for some days, and attention paid to his diet, &c.

In a few days he was again labouring in his vocation, and from that time until now he has not had the slightest return of colic, although exposed to every vicissitude of weather. So anxious is he to prevent a recurrence of it, that, in conformity with my advice, and since the drying up of the blister, he has kept up a constant irritation of the part with tartar emetic ointment.

Case 2. *Neuralgia of the arm and mammæ.*—On the 15th of January I was requested to see a young married lady, who, I was informed, had been suffering for some time past under rheumatism of the chest, for which she had taken a variety of remedies without the slightest relief.

On examination I found considerable tumefaction of the right mamma, with tenderness on pressure, and feeling of tightness across the chest at each inspiration something like asthma. There was also numbness of the right arm, extending from the axilla to the tips of the fingers, incapacitating the patient from the use

of her needle, for the free motion of it produced pain in the chest. Pressure was made on the cervical vertebræ, and very considerable pain being experienced, the course to be adopted was evident.

Recipe.—A blister was immediately applied over the painful part, with directions to be kept on for the space of twelve hours.

16th. The blister drew well, removing almost entirely the numbness of arm. Can move it now without pain to the chest. Mammæ still tender, but the asthmatic feeling entirely relieved. Directed blister to be dressed with savin ointment. From this time till the 20th blister was kept running, and my patient improved rapidly: the breast became speedily smaller and less sensitive; the arm recovered its sensibility and power, and the dyspnœa was entirely relieved. About this time she resumed her needle, and made use of her arm in ironing, without the slightest inconvenience. Blister was now healed and the parts beneath bore pressure as easily as any other portion of the spine.

This lady has since been under my care for acute bronchitis, which proved of considerable obstinacy, but her neuralgic affection has not in the slightest degree returned.

Since writing the above, another case of neuralgia has come under my observation, manifesting itself in wandering pain in the bowels, pain at the epigastrium, and cough. The patient, a married lady of twenty-eight years, attributes all this to a fall upon the back when getting out of bed: there was very considerable pain in the spine about the neighbourhood of the four lower dorsal vertebræ. The treatment was similar to the above, with the addition of cupping, and in less than a week all her bad symptoms vanished.

AUG. H. CLARK, M.D.

New Orleans, May 25, 1831.

15. *Case of successful treatment of Snake-bite by cupping-glasses.*—(Transactions of the Medical and Physical Society of Calcutta, Vol. 4.)

Mr. Clarke, assistant surgeon in the Bengal service, has related the following instance of the successful application of Dr Barry's treatment against the effects of poisons introduced into an external wound.

A fine healthy youth, fourteen years of age, was bitten at 10 P.M. near the bend of the right arm, by a snake, the species of which could not be ascertained. He was immediately conveyed to a set of "snake doctors," who, after practising their quackery for five hours to no purpose, directed him to be taken to a European surgeon. Mr Clarke, who saw him immediately after the native doctors gave him up, found him affected with stupor, insensibility, laborious breathing, extreme feebleness, and rapidity of the pulse, great expression of anxiety and distress, constant efforts to expel frothy matter from his throat, and inability to articulate. The wound was situated a little below the bifurcation of the vein at the bend of the arm, extended horizontally half an inch under the skin, and a slight elevation was perceptible over its course, which was paler than the surrounding integuments, so as to present the appearance of a splinter of fur under the skin. The adjacent integuments, to the distance of two or three inches, were tense and painful. The wound was immediately scarified, and a ligature applied above the elbow. At the same time two attempts were made to administer ammonia, but without success, as the muscles of deglutition were thrown into violent convulsive action, producing increased difficulty of breathing. Mr Clarke then resolved to try the effects of cupping-glasses, and immediately applied one in the usual manner. After it had been applied for an hour and a half, with occasional short intervals, a manifest improvement had taken place. This was several hours after the bite. He was more composed, and expectorated less; the pulse was fuller, and the sense of suffocation less urgent. The cupping-glass was now removed, as very little blood had been drawn by it; and ammonia was administered from time to time, but at first with difficulty. In the course of another hour he could stand up, and soon afterwards he was able to walk. Twelve hours after the bite, the bandage having been still kept on the arm, he complained only of drowsiness and difficulty in articulation. In twenty

hours the drowsiness continued, the eyes were dull and injected like a person recovering from intoxication, and there was indistinctness of vision. The arm, from which the ligature had been removed a short time before, was painful near the puncture, and on the seat of the ligature. Next day he was well, after a long and refreshing sleep.

We are indebted for this article to the *Edinburgh Medical and Surgical Journal* for July 1831.

16. *Observations concerning the Bark of the Root of the Pomegranate Tree, as a remedy against the Tape Worm; by Richard Pearson, M.D.*—In consequence of the strong testimonies recorded by various medical practitioners, attached to the East India service, in favour of the bark of the root of the pomegranate tree (Punica Granatum) in cases of tape-worm, I was induced, about two years ago, to prescribe it to several patients who had voided portions of that worm, and who had previously taken the oil of turpentine and other anthelmintics with little benefit. I prescribed the powder of the dried bark of the root (as recommended by Mr. Breton in the London Medico-Chirurgical Transactions, vol. xi.) in doses of from half dr. to two scr., to be repeated every hour until it should produce some powerful effect; but to my disappointment, in one case it produced no sensible effect whatever, and in two other cases small portions only of the worm came away after its exhibition. The remedy has proved equally unsuccessful in the hands of my friend and colleague Dr Eccles, senior physician to the Birmingham General Dispensary. The bark prescribed by both of us was obtained from London by the principal druggist in this town. To account for these failures I am led to suspect, either that the bark which we used was from the root of the pomegranate tree of British growth, or that it was some other bark in lieu of the pomegranate bark. If it were the bark of a pomegranate tree cultivated in this country (England) it is easy to account for its want of efficacy; for, to possess its medicinal properties in full perfection, the pomegranate tree must grow *in a hot and dry climate.* When cultivated in the gardens of our cold and humid climate, it degenerates—it becomes inert. But perhaps the bark prescribed by Dr Eccles and myself was not the genuine drug; for Professor Richard, of Paris, states, that the bark of the barberry (Berberis Vulgaris) is sometimes fraudulently substituted in commerce for the pomegranate bark. Under these circumstances, I would suggest that no pomegranate bark, except that which shall be imported from the East Indies, be offered for sale by the druggists. Mr Breton has shown that this bark loses nothing of its virtues by drying; hence it may be easily sent from India reduced to powder, and put into bottles well corked and sealed.—*Extracted from the Edinb. Med. and Surgical Journal.*

17. *Inflation for Colic.*—We derive the following article from the Medico Chirurgical Review for July 1831.

Mr John King, of Irvine, has promulgated a sovereign remedy for the colic, in the last number of our contemporary of Glasgow. It is inflation, or blowing up of the intestines, per anum. He conceives that it was a happy thought of those who hit upon this remedy in the hour of danger, after all their other efforts had proved nugatory. "It paralyses, as it were, the constricted fibres of the bowels, and may be used in the following cases, if not with complete success, at least with advantage, viz.—the various kinds of colic, proceeding from torpidity, spasmodic constriction, viscid meconium in new-born infants, impaction, bezoars and other intestinal concretions, volvulus or intus-susceptio, and some cases of hernia!" This is a very encouraging list—very encouraging indeed. Mr. King relates a case in which inflation proved successful, but we need not do more than allude to it. He secured the bladder of a glyster-bag to the nozzel of the bellows, introduced the pipe into the rectum, and puffed away with the best possible effects. Mr King conjectures that inflation would have been beneficial in some other cases, but he gives the particulars of no more. He regrets that the remedy should have fallen into disuse; had it been a good one it proba-

bly would not have done so. We do not ourselves perceive the advantages of air over fluid as an injection, and many individuals with colic would rather let air out than take it in. We say nothing of the *spectacle* of a learned physician puffing up a person's anus with a pair of bellows. The remedy may be one of great importance for any thing we know to the contrary.

In another article of the same number of his Review, Dr Johnson makes amends for the tone of levity of the preceding lines, and calls the attention of his readers to another communication on the subject of the above mentioned remedial plan, contained in the 14th number of the Glasgow Journal. This communication is from the pen of Mr Blacklock of Dumfries. Dr J. remarks, that "so long ago as 1820, Mr Blacklock communicated to him the fact of his readily removing intus susceptions (where no adhesions had taken place) in the dead body, by means of injections of air per anum. Since that time, he and other practitioners in his neighbourhood have frequently resorted to this process, in cases of obstinate obstructions of the bowels. One of these cases was Mr Blacklock's own son, then about three years of age, who, during nine days, remained without any passage through the bowels, notwithstanding the employment of various purgatives, and numerous enemata. Recourse was ultimately had to inflation, when the little patient cried out for the commode, and had a free evacuation. After a few minutes the inflation was repeated, and was soon followed by another fœcal stool. The boy rapidly recovered, and is now living and in good health.

"The great inconvenience, or indeed misery, produced by flatulence in the stomach and bowels is, perhaps, a less valid objection to the artificial inflation now under consideration than might at first sight appear. In the first place, it is to be remembered, that the gas disengaged in the primæ viæ, during indigestion, and other disordered states of the digestive organs, is very far from being identical with common atmospheric air. This has been proved by chemical analysis, but still more certainly by common observation. The gases generated in such conditions of the alimentary canal, are not only various, but many of them appear to act as acrid, or at least deleterious poisons, during their stay in the first passages. They are more distressing, also, in proportion as they are situated higher up in the alimentary canal. In the stomach and duodenum, they are far more inimical to our feelings and health, than in the small intestines—and in the *latter*, they are infinitely more difficult to bear than in the colon. The morbid and indescribable feelings resulting from the extrication of gas in the stomach, are very imperfectly known, and not at all appreciated, in a proper manner, by medical practitioners in general. Even where the eructated gas is perfectly inodorous and tasteless, its presence in the stomach produces, in many instances, the most terrible sensations. But it is the nature of these noxious gases to keep their station resolutely in the localities where they are generated, by producing spasmodic constriction of the tubes both above and below them. They are then pent up, and their presence not always, or even often, suspected or known. These, and many other considerations which we could adduce, may lead us to suppose that the introduction of common atmospheric air into the colon, or even into the small intestines, will be unattended with the inconvenient or injurious effects resulting from aerial or gaseous products of disordered digestion. If medical men were to make experiments on their own persons more frequently than they do, their patients might be benefited, and their own sphere of knowledge very much extended. It would be well worth while to try the substitution of common air for warm water, in cases of constipated bowels; for if the former fluid answer as well as the *latter*, the facility of its employment in all situations would be an immense advantage."

Dr King's case was published entire in the *London Medical Gazette* for 28th May 1831, and the result obtained induced Mr Charles Fluder of Lymington, to try the plan in a case of Ileus then under his care. His account of the case is contained in the number of the same Gazette for June 25. Mr. F. had used ineffectually several active remedies, and thought he was justified in fearing that death would soon close the scene. Under these circumstances Mr F. re-

solved on inflation. He followed the plan adopted by Mr King, namely, by means of a common pair of bellows, a bladder, and glyster pipe. The effect, as it regarded the ease of the patient from pain, was instantaneous, and he continued the inflation till the whole of the abdomen became somewhat tense. From this moment the nausea and vomiting which had harassed the patient throughout, ceased entirely. The pain became diffused; she described it as very trifling, and altogether different from what it had been; the countenance, almost the facies Hippocratica, was already re-animating; the flickering flame of receding vitality was rekindling, and Mr F. was himself fully satisfied that the obstruction was moved. Considering, however, that there probably was an increased degree of torpidity in the lower bowels, having been deprived for eleven days of their accustomed stimulus, the fœces, Mr F. gave, soon after the inflation, a moderate dose of senna and salts, which was followed in about two hours by a copious scybalous dejection. From that moment every thing went on favorably, and a simple gentle aperient, repeated at intervals as occasion required, constituted the whole of the subsequent treatment.

18. *Treatment of Hysteria.*—In one of his lectures delivered at St Thomas's Hospital, Dr Elliston spoke of a case of what he calls Hysteria. The disease occurred in a young woman 25 years of age, and arose from the absence of her sweetheart. "This," says Dr E. "had such an effect upon her, that it not only threw her into fits, but it made her lisp—made her very peevish and snappish even to me." "It was a case of Hysteria, which affected particularly the right side of the body, and the face was drawn to that side from the violent contraction of its muscles. The right hand was clenched, with the thumb bent in upon the palm, and the right arm gave more resistance in the fit than the left. She was the girl who I told you said *toe* for *so*, and *yet* for *yes;* in fact, speaking like a child."

Dr E. remarked, that the treatment indicated was decidedly anti-inflammatory. She was cupped, in the first place on the loins, to a pint; she was once cupped on the occiput to the same extent, and well purged every day with a clyster of oil of turpentine, consisting of three ounces to sixteen ounces of gruel. This was given her the day after her admission, the 4th of February, the 5th, and so on for several days. Under this treatment the fits became not only very slight, but very rare, and at last ceased entirely, so that the treatment was left off. She then took house diet and tonic medicine, a drachm of subcarbonic of iron three times a day. She recovered her speech, and could say *yes, so,* exactly like other people. She was no longer peevish, and became perfectly well, though her illness had existed two years.

"You will find this," Dr E. added, "a very successful mode of treating many cases of Hysteria—that is to say, the free loss of blood from the occiput or the loins, and perhaps from the arm; but those are convenient places to cup, and the glasses were accordingly applied there; and as the disease had this particular exciting cause in her, I was anxious to cup her in those quarters. The oil of turpentine, too, is certainly a most useful remedy in the treatment of hysteria: it unquestionably has far more effect, I think, than mere purging: it seems to have a peculiar influence, I think—I will not say what—upon the nervous system."—*London Medical Gazette, June* 1831.

19. *Phthisis cured by living on raw turtle.*—We extract the following remarks from a work which has lately appeared in London.—Dr Hamilton's History of Medicine.

"However the art of the cook may have succeeded in corrupting the natural qualities of the flesh of the turtle, by the addition of powerful condiments and inflammatory sauces, so as to bring upon it an unmerited stigma; in its unsophisticated state, it is perhaps one of the most nutritious, salutary, and restorative articles of diet in existence. It was most satisfactorily proved in a case which fell but a few years since under the observation of the writer of this volume, and can no where find a place more appropriate for its introduction than the present. A gen-

tleman, resident in one of our oldest and most frequented islands in the West Indies, having, from a long continued course of free living and late hours, contracted a complaint, to all appearance confirmed phthisis, accompanied with excessive emaciation, debility, teasing hectic cough, and all the other ordinary symptoms—when wasted to but a shadow of his former self, was advised, as a last, though almost hopeless, resource, to try change of air, and endeavour to glean health from the sanative breezes of the uninhabited island of Testigos, on the coast of the Spanish main. This is a low sandy island, destitute of human habitations, and only resorted to at particular seasons by fishermen, who come in quest of the turtle, which frequents its shores, unintimidated by the sight of man. Testigos could thus boast no vintners' cellars or luxurious taverns, to debauch the appetite and sap the constitution—no social parties to tempt to indulgence—no boon companions to betray into intemperance: nature alone presided within its solitary bounds, and compelled obedience, however reluctant, to her salutary laws. So deplorable was the condition of the invalid, and so utterly hopeless appeared to be his chance of recovery, that, on embarking for that island, which he hardly expected to reach alive, he carried a supply of planks and tools along with him for the double purpose of constructing a hut to shelter him in life, and afterwards form a coffin to receive him in death. Arrived at Testigos, he led from necessity a life of primeval regularity and simplicity, rising with the orb of day, and courting the balmy influence of sleep, as soon as the shades of evening fell—his food was the turtle's flesh, uncontaminated by the arts of the cook, which tempt the palate but undermine the health—his drink the simple element, uninflamed by the admixture of deceitful wine or inebriating spirit. After thus living in patriarchal simplicity for some few months, he returned to his astonished friends, so altered in appearance, and so renovated in health, that even those who had been most intimate with him hardly knew him upon his arrival, and could with difficulty be persuaded that the robust and ruddy-complexioned being before them, was the same who had so recently parted from them a living skeleton —a wasted form."

20. *Treatment of Croup.*—Dr Goodlad, of Bury (England), has published a paper on this subject, in one of the numbers of the North of England Medical Journal. From this paper we shall make a few extracts.

"In this complaint every gradation may be traced by placing the ear within a short distance of the patient's chest, from the brazen like sonorous cough, to the gentle stridule heard more faintly as the patient approaches to convalescence, and is able to draw a full and slow inspiration. On the other hand, if there be rattling conjoined with a disposition to sleep, pale or livid lips, and cold extremities, effusion has taken place; death must follow, and will be accelerated by the remedial means we should otherwise employ. But so long as the attack is accompanied with a high sounding cough, without rattling, the mischief, whatever it may be, is not irremediable; I would go further, and declare it ought to be arrested, and feel a perfect conviction, in the majority of cases, that it may."

"Among the poorer classes in Lancashire who seldom call in assistance for croup until all chance of recovery is destroyed, I have never yet seen a case terminate fatally, without an effusion in the bronchia being conspicuous several hours before death, and I am much disposed to attribute such an event, where it has happened, to the remedies made use of, rather than consider it a natural termination of the disease; particularly as some of those commonly in use are well calculated to produce it.

"Amongst these, the warm bath is one of the most active, and at the same time, most injurious; and I cannot imagine how any one, who has once witnessed its effects, can again recommend it in croup. It is, in my opinion, so decidedly hurtful, by quickening the circulation, that I should interdict its use in almost all inflammatory cases. The warm bath, I think, is never useful unless prolonged until faintness is produced; and in the early stages of inflammatory complaints, it is often impossible to produce this effect, until the heart beats more than 130 times in a minute, which is a degree of excitement I think unwar-

rantable. If resorted to later, effusion is brought on sooner than it would otherwise supervene; and many practitioners could, I think, call to mind cases where its use has been followed by unexpected death: the vessels, previously emptied perhaps by bleeding, having given way, and apoplexy supervened."

Mr Goodlad confounds the warm with the hot bath—the latter is exciting, the former not. Mr G. condemns emetics, and considers nauseating doses of tart. em. as doubtful remedies in croup. He found blisters injurious when applied early, and near the trachea. According to him, two indications must be attended to in the cure of croup; first, to subdue the inflammation of the wind-pipe; the other to relieve the oppressed circulation. "The causes which produce croup, its symptoms and progress, alike indicate the necessity of blood-letting, and this remedy, in comparison with which all others sink into insignificance, should be immediately resorted to. Any quantity of blood may be drawn by leeches, and the local complaint, in almost all cases, be subdued by them; for if one crop of leeches do not remove it, others must follow until the breathing becomes free, or the child so faint, that further depletion would be unsafe. This mode of taking blood by emptying the vessels which are inflamed, will, it is evident, afford relief, with least expense to the constitution; but when the complaint has existed many hours, and the jugular vein becomes alternately distended and collapsed, during each inspiration; when the angles of the mouth are drawn downwards, every muscle of the neck brought into action, and the breathing consists of a series of gaspings, there will not be time afforded for leeches, and not a moment must be lost. The external jugular vein should be immediately opened with the lancet, though this operation is sometimes exceedingly difficult, requiring a quick eye and a prompt hand to catch it between each inspiration."

Mr Goodlad thinks that it is safest in general to unload the general circulation where that is requisite from the system at large; and treat the local complaints with leeches where they can be easily obtained. If they cannot, he recommends the finger to be placed upon the orifice for a short time, when the breathing is relieved; and another and a smaller quantity of blood to be taken from the same orifice, until faintness deter us from proceeding further. In whatever way, however, blood be taken, faintness must be induced, and *kept up for some time.*

If the gums show heat or thickness in any part, they ought to be freely lanced. The bowels must be kept open by calomel and jalap, castor oil, &c. Mr. G. recommends the frequent exhibition of large doses of calomel and opium—not before blood-letting, but after; by this operation the head has been cleared, and the breathing has been quieted. By this combination sleep is induced; cough is appeased; perspiration is obtained and reaction prevented. It is also thought that the calomel acts here, as it does in some other diseases, by preventing effusion and producing absorption.

"Another advantage arising from the combination of opium is, that it enables us to give a larger quantity of calomel than would be otherwise practicable, without its passing off by the bowels; and as the glandular system in children is seldom affected by it, and ptyalism, therefore, rarely induced, we need not be deterred from giving it largely, and have occasion only to watch its operation on the bowels."

21. *Iodine in Cutaneous Diseases.*—Dr Jeffray, of Liverpool, has stated in the Lancet, that he has administered the tincture of iodine in various cases of psoriasis, and the different varieties of herpes, "with almost never failing success," as well as in lepra vulgaris. In the latter case the diluted unguent. hydrarg. nitrat. was also employed. We observe that Mr Jeffray begins with ten drops twice a day, increasing the dose to thirty drops night and morning.—*Medico-Chirurg. Review.*

22. *Colchicum in cholera.*—By Mr Taitt, Caen, Normandy. The subject of cholera, from a dread of its appearance in this part of Europe, seems to occupy much public attention; it therefore becomes the duty of every professional man to give his experience in the disease, so formidable in its nature, and so intractable in its management. With this view a communication was made to the edi-

tors of the *Edinburgh Medical Journal*, in December last, by a young friend of mine, stating the successful use I have made of the saturated tincture of colchicum in many cases of the milder form of the cholera, as it appears in this part of Europe; but as the paper has not been acknowledged, I beg, if you think it of sufficient importance, that you will, through the medium of your journal, suggest it as a remedy worthy of trial in the more aggravated forms of the disease, as it appears in Asia, and lately in Eastern Europe. It was administered in doses of from sixty to eighty drops; and in no one case did it fail to produce immediate, decided, and lasting benefit; except in that of an infant, which was dying when I visited it first. I think it a valuable remedy in cases of indigestion, with vomiting and purging, as well as in diarrhœa proceeding from a deficiency or total want of bile; all which appear to be modifications of the same disease. There is at present residing in your neighbourhood a most respectable family who can vouch for its efficacy—six members of which, in common with many other inhabitants, both English and French, residing on the same side of a street in this city, were seized on the same night, some time in September 1829, five of whom were relieved by this remedy, and up and well in a few hours, after a dose of castor oil—while two others, mother and daughter, who would not consent to take it, were confined several days. I will not enter into any theoretical speculations on the subject, but simply state, that it was in fine taken by myself, as a probable remedy, and powerful stimulus in exciting the liver, when in a state of great torpor, and aggravated by exposure to a cold evening air, in the vale of Taunton, after a fatiguing hot ride through part of Devonshire, during a sultry day in the month of September 1825. My attack was ushered in by cold chills and sensations similar to those of a slight paroxysm of intermittent, followed, on awaking four or five hours afterwards, by frequent eructation of offensive gas, vomiting and purging. Being in the habit of taking this tincture to regulate the biliary secretion, which was deranged by a long residence in the West Indies, I happened to have a vial in my chaise-box, and took about sixty drops, by the light of the street lamp. This dose arrested the symptoms in less than fifteen minutes, and enabled me, after a dose of seidlitz in the morning, to proceed on my journey. A similar effect followed an attack the next autumn at Liverpool, when much of the disease at that time prevailed. I communicated these circumstances to a friend of mine, at present on the civil establishment at Madras, who not being a professional man, will no doubt have allowed them to escape him. He was, however, the father of the family above alluded to.

"Your experience in both climates will enable you to judge of the probable success of this medicine in the diseases of India, if it be identified with that of Europe, or only differing in degree from accidental or particular causes; and your zeal I am sure will insure it a trial, if you think so."—*Med. Chir. Rev.*

23. *On the treatment of gout.*—At a meeting of the London College of Physicians, held May 30, 1831, Sir H. Halford read a short paper containing some observations on this subject. A report of this paper is contained in the *London Medical Gazette*, from which we extract the following article.

"Sir Henry remarked, that he felt as if some apology were necessary for directing the attention of those present to a complaint on which so much had been written as gout; but, said he, 'I rest assured that you will receive in good part the result of my long experience in the treatment of that disease, and that if I state to you that there is no malady to which I am called upon to administer, that I prescribe for with so much confidence in the resources of our art as for gout—formerly that opprobrium medicorum, you will give me willingly a few moments of your attention.' On the various seats of gout he would not dwell: in fact, it was to be met with in almost every part of the human frame. Some believed they had seen it in the eye, and he had himself witnessed it in the kidney, in the urethra, in the prostate gland, and in the tonsils. One of his colleagues had suffered from it in these, and he mentioned an eminent physician in the country so harassed by it, and so disappointed by finding no relief from the usual remedies of quinsy, that at length he plunged a lancet into it, in case any deep

rooted collection of matter had taken place. None followed, but the gout was dislodged, and in a few minutes made an attack upon the great toe. The angina disappeared, but the disease ran its usual course in its new situation.

"Among the various remedies for gout, Sir Henry's dependence rests on colchicum. Under ordinary circumstances of gout in the extremities, he does not commence its use immediately, but postpones the antidote till the disease shall have become fixed: he then directs the wine of the root, prepared according to the formula of the pharmacopœia; and from this he expressly declared that he had not known 'a single instance of any untoward effect.' Frequently it removes the complaint without the manifest increase of any secretion: sometimes it causes perspiration, and sometimes acts as a diuretic; but so far is it from being apt to purge violently, as the eau medicinale was wont to do, that it is necessary in most cases to add a little sulphate of magnesia. The following is Sir Henry's prescription:—A saline draught, with camphor mixture; a drachm of syrup of poppies; and not exceeding from thirty-five to forty-five minims of the vinum colchici at bed time. In the morning the draught to be repeated, but with a little modification, viz. only twenty-five minims of the colchicum wine and half a drachm of the syrup of poppies, while to this is added a drachm of Epsom salts. This method is to be pursued for several successive days, and then followed up by a pill, composed of three grains of an acetic extract of colchicum,* and one or two grains of Dover's powder, with a like quantity of compound extract of colocynth, the whole being terminated by a mild purgative. 'It had been argued,' said Sir Henry, 'that it had been laid to the charge of colchicum that its good effects were but temporary: now, even if it were so,' he asked, 'whether three or four attacks, of as many days each, were to be compared in the extent of suffering they produced, with the weight of a six weeks confinement, spring and autumn, which used to be the case before the virtues of colchicum were known?' In addition to which, the evils resulting from the formation of chalk stones in the joints are now almost entirely done away—by the control exercised by this medicine over the inflammatory stage of the disease. But, besides, Sir H. Halford's experience is against the correctness of the opinion that gout returns more frequently under the use of the colchicum: on the contrary, when the vinous infusion has been followed up by the acetous extract, he holds himself justified in asserting that the attacks are removed to as long intervals as they used to be when left entirely 'to patience and flannel.' The learned author of the paper did not, however, recommend the above as a specific treatment to be adopted in all forms and varieties of gout, but as one of general application, requiring to be modified with varying circumstances. Occasionally some light preparation of bark is required in worn-out frames, to reinvigorate them after the colchicum: occasionally a blue pill is of service in restoring the flow of bile when it has become deficient. Of the different preparations of colchicum an infusion of the root in sherry, has appeared to Sir Henry to be decidedly the best: that made from the seeds is apt to excite insupportable nausea, and when this has once happened, it is in vain that you urge a patient to try it again: he prefers the acute agony of the disease to the distressing misery of the remedy.

"The learned president proceeded to state that colchicum was not a new medicine, having been used in the sixth century, under the name of hermodactyle. Being desirous to ascertain whether this was identical with our colchicum, he had procured some from the market at Constantinople, specimens of which were laid on the table: they appeared to be the same as the common meadow saffron, and Sir Henry is about to make trial of them in gout, in the same manner as colchicum.

"In preventing the recurrence of the gouty attack, by far the best remedy has appeared to be a few grains of rhubarb, with double its quantity of magnesia, every day; or some light bitter infusion, with a little tincture of rhubarb, and fifteen grains of the carbonate of potash, if the digestive powers were considerably impaired. Depletion, either by bleeding or strong purging, is to be avoided.

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* Made by evaporating an infusion of the root in vinegar.

But far more depends on the patient's management of himself than on any medicines, in keeping the malady at bay. He must live moderately, and dine earlier than the present fashion enjoins. Gentle, but regular exercise, and a mind free from anxiety, and not exhausted by deep study, are also among the precautionary measures; and in addition to these, the patient must be chaste. Pliny alludes to this, and uses a remarkable word in expressing it—*sanctitas*.

"In concluding his valuable and interesting remarks, the learned president stated that he had repeatedly seen the waters of Aix-la-Chapelle of much use in restoring the weakness of the knees and ankles, brought on by repeated attacks of other disease."

24. *A case of Tetanus successfully treated by the application of the Caustic Vegetable Alkali to the spine. Also, three cases of Cholera in which applications to the spine were successful; and a fourth case of abdominal irritation relieved by similar means. By L. P. Gebhard, M.D. of Philadelphia.*—We take great pleasure in laying the following histories before our readers. *Case* 1. On the 11th of June 1827, a fine, healthy looking girl, aged 14, daughter of J. J. White, on a visit to one of her friends, a short distance in the country, jumped inadvertently on the teeth of an iron rake, which lay on one of the garden walks. She was barefooted at the time; the teeth penetrated some distance in the bottom of one foot. After having crept to the house, a short distance off, she fell into convulsions, which continued, with little abatement, for several hours, after which she became relieved and was taken to her father's house in the suburbs of the city. A physician was called to see her soon after the accident, who either did not prescribe for her, or his prescriptions were not attended to; as I found when I visited her on the following day that nothing had been done in her case, although 24 hours had elapsed since the accident occurred. She complained of a stiffness of the muscles, extending from the affected foot up to the neck of the same side, without any spasm of consequence being apparent; her pulse deviated but very little, if any, from the healthy state. Upon examination I found the wounds in the foot closed up; I immediately enlarged them with a scalpel and applied the spirits of turpentine and caustic freely to them. She soon after became affected with spasms, for the relief of which I administered opium largely; the spasms nevertheless increased in frequency and violence, until they occurred at very short intervals, not only producing a rigidity and contraction of the dorsal muscles, as in opisthotonos, but also a constriction of the muscles of the precordia and the epigastric region, and an oppression and difficulty of breathing, which threatened the almost immediate extinction of life. In one of my visits to her on the 13th, a violent spasm came on, in which she exclaimed, that she could no longer breathe, and must certainly die. The case was truly distressing for the physician as well as the parents to witness; the extreme anxiety and oppression under which she laboured, during the paroxysm, and the prostration of the system after it, induced me to believe, that the next would, in all probability, close the scene in death, and whatever I intended further to do in her case, must be done without delay. Her parents were willing that I should make use of any means to save her life. I immediately sent for the caustic vegetable alkali, which I dissolved in water and applied to the whole surface of the spine, from the upper cervical vertebræ to the os sacrum. Before any impression was made on the back, by this process, another spasm came on, which continued until the whole surface of the spine became inflamed, when she exclaimed (to my delight), you are burning my back, and in a few moments the muscles became relaxed, the spasms disappeared, the patient was relieved, and the cure was effected: and she now lives in the enjoyment of perfect health, as a monument of the happy effects of a powerful impression made on the medulla spinalis.

Case 2. I will now relate a case of cholera cured solely by an application to the spine. On the 4th of March 1831, I was called to visit R., son of M. R., a sprightly and intelligent lad in the 10th year of his age, the only son and child of respectable parents; he was pale, rather emaciated, and feeble, though not confined to his bed. In the summer of 1830 he had an attack of bilious remit-

tent fever, which continued for some time, since which his health had been very delicate; but within the last few months, he had several attacks of cholera, attended with pain in the bowels, but no fever. These attacks were gradually wearing out his strength, and were calculated, if not very soon arrested, to consign this interesting little fellow to an untimely grave. He, in this instance, had an attack of cholera, such as I have just mentioned, for which I ordered some mild remedies, such as opium, creta ppt., &c. which soon relieved him; after which I directed mild tonics and exercise in the open air. On the morning of the 28th of March I was again called to visit him in an attack of the cholera; the vomiting had, in a great measure, ceased when I saw him, but the diarrhœa still continued, with a slight pain in his bowels; his pulse was quite feeble and his tongue slightly furred; he had never complained of pain in his back, and nothing more than a trifling tenderness was felt, on pressure about the lower dorsal and upper lumbar vertebræ. Upon reflection, I came to the determination that I would direct no internal remedies, but trust entirely to an application to the back for relief. I ordered leeches to be applied to the part that was slightly tender, to be succeeded immediately after by a blister to the same part. No sooner was the blister felt, than the diarrhœa was checked; and the next morning, only 24 hours after the first visit, the patient was entirely relieved. He has had no cholera since, his strength and appearance have surprisingly improved, and his health is perfectly re-established.

Case 3. May 17, 1831, I visited W. S., son of R. S., aged 10 years, the irritation was in this case confined to the bowels, attended with pain preceded by looseness; there was considerable tumefaction of his abdomen, which was so sore and tender upon the least pressure, that he could not bear to have it touched, his skin was hot and dry, and his pulse rather feeble and frequent; this soreness also extended in a slight degree to the lumbar region. I did not think proper to order any medicine internally, but depend entirely upon an application to the spine. I directed him to be leeched over the lower dorsal vertebræ, to be succeeded immediately after by a blister over the same part. The next morning I found the tumefaction had subsided, and the tenderness of his abdomen entirely relieved, and he was able to be about the house: the next day he was quite convalescent, and in a few days as well as usual. This case shows decidedly the powerful influence which an application to the spine exerts on abdominal irritation.

Case 4. I will give a very short extract from another case of cholera in a child of 2 years of age, which occurred within the last month, in consultation with Dr J. Wilson Moore: 24 hours had elapsed after the attack before medical aid was obtained; the symptoms were very violent and obstinate, not yielding to the remedies usually employed in that disease. On the 3d day, the prostration of the system being very great, the extremities cold and clammy, the stomach very readily nauseated, by which internal remedies could not be regularly persevered in, and consequently not altogether to be depended on, led us to rely chiefly upon external means for relief. The principal external application was the decoct. of cantharides one ounce, spt. terebinth. two ounces, and a small quantity of essential oil combined; this we directed to be rubbed on the cold extremities, and also down the whole extent of the spine, which was persevered in with the most happy effect, by relieving the vomiting and looseness in the bowels. On the 4th day after the irritability of the alimentary canal had in a great measure subsided, a stupor and insensibility came on, which indicated the commencement of a cephalic affection, such as frequently occurs in the last stage of this disease, and is too often the precursor of death. The stomach being now settled, and the system still very feeble, we ordered wine whey and gum arabic water as nourishment, and the continuance of the frictions. After duly considering the extreme debility produced upon the violent and protracted irritability of the whole alimentary canal, and the inability of administering the medicines regularly, by reason of the unsettled state of the stomach, we have been led to the conclusion, that the most efficient remedy in this case was the external irritation to the extremities, and especially to the spine, which was kept irritated during

the whole progress of the disease. In the 7th day of the disease, the child was convalescent, and is now doing very well.

It has, I think, been clearly shown by the cases just related, that the most prominent and deadly symptoms of the Indian cholera have been promptly and decidedly relieved by application of powerful remedies to the spine. Relieve these symptoms, and you relieve all that is absolutely destructive in that disease. It is not necessary here to enter into learned disquisitions concerning the rise and the progress, the symptoms, the remedies, the post mortem examinations, or the contagious or non-contagious character of this formidable disease. I have not the time nor the ability to shine conspicuously in such an Herculean task; and if I had, I should only reiterate that which has been given us from the experience of those who have witnessed the scenes of desolation and death produced by that direful disease. My only wish is, to add another remedy, which I trust may be efficient, to the catalogue of those which have already been used, so that if this scourge which commenced at Jessore in India in 1817, and extended its ravages to China and Persia, and the north of Europe, destroying in its route more than than 2,000,000 of souls, should ever visit this country, we shall be the better prepared to meet it. It may be conceded by many that though these remedial agents applied to the spine, may be serviceable in our cholera and our spasmodic diseases, it is no evidence that they will be in Indian cholera. For what resemblance has our cholera to the Indian cholera, that we should look for favourable results from those remedies which might be successful in any of our diseases?

Case 5. On the 27th of September 1831, I was called to visit an infant daughter of G. R. aged 7 months. She was taken with cholera on the 24th, and was without medical aid until the 27th. When I first saw her she was very feeble, her skin cool, and her pulse weak. The vomiting and diarrhœa still continued unabated; for which I ordered lime water and milk, or rice water in small quantities, a ginger plaster to the epigastrium, and a preparation of creta ppt. combined with an opiate, in order to allay irritation, and a very small quantity of calomel frequently repeated, for the purpose of acting on the biliary secretions, as the stools, by their light appearance, indicated an absence of bile. These remedies were rejected in different forms without benefiting the patient in the least degree. The debility (as a necessary consequence of the continuance of the cholera) increased rapidly. On the 28th the pulse was very feeble; the extremities cold and clammy; the countenance haggard and shrunk, and every symptom of excessive prostration apparent. I now concluded to depend no longer upon internal remedies, as they promised no benefit, but to rely solely upon external irritants for relief. I accordingly ordered decoct. cantharides half ounce, spt. terebinth. one ounce, ol. sassafras, one ounce, combined; to be rubbed frequently on the cold extremities, and particularly down the whole extent of the spine. The coldness and insensibility of the extremities were so great, that it took more than two days before a natural warmth could be produced in them, notwithstanding the frictions were applied every hour or two throughout the day; but my principal object being the irritation of the spine, I attended to the application myself until it became inflamed, and no sooner was this effected than the vomiting and diarrhœa began very perceptibly to decline. As soon as the stomach became composed, I ordered wine whey and gum arabic water, in very small quantities, frequently repeated, in order to assist in affording nourishment to the patient. On the 29th the stomach was settled, the bowels checked, the extremities warm, the countenance much improved, and she began to take her nourishment as usual. On the evening of the 30th, after having slept five hours without being disturbed, her system again became prostrated, her pulse was almost imperceptible, and a general coldness pervaded almost the whole surface of her body. I reproved the mother for this negligence, and ordered the frictions to be reapplied every half hour, both to the extremities and spine, until the former became warm, and the latter highly inflamed in all the parts where the cuticle had not previously been destroyed. I ordered at the same time the wine whey and gum arabic water to be frequently administered. On the morning of the 1st of October I found the patient quite relieved, since which she has been conva-

lescent. Permit me here to add, that previous to the irritation being produced on the back, I think I can safely say, that I never saw the appearance of death more strongly depicted on the countenance of any child, in the last stage of a fatal case, than in the present instance; and if induced, as formerly, to depend chiefly upon internal remedies for a cure, I should have considered the case as hopeless and irretrievably lost. The more experience I have had in these cases, the more I am convinced, that the fatality attendant upon this disease is generally in consequence of the prostration induced by the continuance of violent symptoms, not controllable by any internal remedies. At that all trying period, when internal remedies can no longer be relied on, and the little sufferer is fast sinking into the arms of death, it is then the duty of the physician to contest every inch of ground with this grim tyrant, as in the instance above related, and, by the blessing of providence, he will be amply rewarded for his labours by the subjugation of this destroyer, and the restoration of the inoffensive little creature to the arms and the embraces of its tender and affectionate parents.

I think it may be fully shown, that our cholera is not so dissimilar to Indian cholera, as might at first appear; let us for a moment take into consideration the points of resemblance between the two diseases. In the first place, the Indian cholera is an epidemic disease: so is the cholera infantum. If any doubt exists on this point, look at the bills of mortality every summer. Do they not loudly proclaim, the havoc that this disease makes among children, in our large cities, every year? Ask any intelligent and feeling mother who resides in any of our cities and has an infant under two years of age, whether she does not dread the approach of another summer; she must either run the risk of losing her child, or flee for refuge to some country situation, or in other words, she must leave the infected district, during the summer months, if she consults the safety of her child. I know it is said, and very justly too, that unripe fruits are a frequent cause of the disease; but this is only one among several causes which contribute to render the affection so frequently fatal. My impression is, that the peculiar state of the atmosphere is, on all occasions, the remote cause of the disease, while dental irritation is the predisposing cause, and not unfrequently, the least quantity of unripe fruit or indigestible food of any kind, by disturbing the digestive process, becomes the exciting cause of the disease. I do not say that all these causes are necessary at all times to induce the disease; as for instance, a child may have cholera without eating any indigestible food whatever, but still I contend that though unripe fruit, or indigestible food, or dentition, may not be absolutely necessary, singly or combinedly, to produce the disease, yet this peculiar state of the atmosphere is really necessary to the production of the affection. Now, merely get rid of this remote or predisposing cause, or whatever you may please to call it, by sending the child into the country, and the other causes cease to exert the same deleterious influence upon the system. Hence physicians knowing the beneficial effects of the country air, have, I believe, uniformly advised such patients to be sent into the country when circumstances would permit. There can, therefore, be no doubt that our cholera infantum is an epidemic; there is, however, a difference in its character from Indian cholera. Our cholera is confined to cities, affecting principally children, and prevailing almost uniformly during the summer months; whereas the Indian cholera is of an itinerant character, confined principally to adults, and raging at all seasons of the year. Many of the symptoms of the cholera infantum are similar to the Indian cholera; the vomiting and diarrhœa are in both cases violent; the discharges of both thin and watery; the prostration of strength very sudden; the skin cold and clammy; the thirst insatiable; and the termination in many cases of both diseases has been fatal within the space of one, two, or three days, even under the most judicious treatment. Other symptoms might be enumerated in which both diseases are similar. The principal symptom in which they appear most to differ is that of spasm; although it not unfrequently happens that in those cases of cholera infantum which terminate fatally, the last scene is closed in spasms. Now, after taking this hasty and imperfect view of the subject, I would ask, why we may not from analogy expect similar results

from similar remedies in both diseases. There is another reason why we may look for a favourable result from the application to the spine in Indian cholera: because it is simply a disease in which the alimentary canal is in a state of irritation; no deep seated inflammation, or organic affection or lesion whatever exists which is calculated to render the disease necessarily fatal, or which would prevent a strong impression, applied externally, from removing the impression which already exists. According to the report of the Medical Board of Bengal, as stated by Dr Hawkins, "in nearly all the post mortem examinations in which the patient died in the early stages of the disease, their bodies exhibited hardly any unhealthy appearance, and even after the disease had existed for some time, the internal coats of the stomach were perfectly healthy, and although the intestines varied from a deep rose to a dark hue," it, in all probability, was nothing more than might be seen after death from many other diseases, where, previous to death, those parts were scarcely suspected of being diseased. I regret that only one case is related by the Bengal Board, in which the state of the spinal marrow was examined; but even in that case, indications of great inflammation were detected in its sheath. If we were to judge of the seat of the disease from this case, the remedies which I have recommended to the spine, would be more appropriate than any others that could be recommended, inasmuch as they would be applied to the very part affected, and consequently better calculated to relieve.

According to the Bombay Report, and that of the Medical Board of Bengal, and Mr Annesly's in the general hospital at Madras, also the Report of Mr Corbin and other medical officers in India, the principal treatment, or that which was found to be most successful, in the Indian cholera, has been bleeding, calomel, opium and antispasmodics. The medical council of St Petersburgh also adopted the same practice as that pursued in India; in addition to which Sir William Crichton observes, that diaphoretics were found more serviceable at Moscow than the other remedies. A preparation of bismuth has also been highly spoken of in this disease, and is said to have been employed lately with much advantage.

According to my present view of this disease, if called upon to prescribe in a violent case, I would pursue the following course: if the system was high, skin hot and dry, pulse full and tense, I would bleed freely from the arm, and administer half a drachm of calomel; if attended with much pain, give an opiate and repeat the calomel until the stools assumed a bilious appearance; if the bowels were obstinately constipated, give aloes and rhubarb in combination with it; and without waiting one moment for the result of the remedies already employed, direct the application of cups to the whole surface of the spine, from the upper cervical vertebræ to the os sacrum; if the system would bear any further reduction, scarify the cups, if not, apply them dry; immediately after which, if the symptoms still continued, I would direct the whole spine to be inflamed and highly irritated by the caustic vegetable alkali; and if the symptoms did not still yield, repeat the application of the caustic to the spine, until the prominent and serious symptoms had entirely subsided—thus keeping up a continual counter-irritation, calculated eventually to subdue the irritation already existing.

If this irritation applied over the spine is calculated to be so beneficial in tetanus, why not in hydrophobia, inasmuch as both are spasmodic dieases, produced by irritants applied to some part of the body, in the one case by the bite of a rabid animal and in the other by instruments of various kinds. I allude here of course to traumatic tetanus. However different in some respects the cases may be, they nevertheless produce similar effects on the nervous system; namely, spasmodic action, which, if not arrested by some powerful agent, will sooner or later destroy life. In the case of tetanus which I have related, the application to the spine reduced the spasms immediately, and these spasms were more general and extensive than in hydrophobia, and equally violent and fatal in their consequences. In hydrophobia two prominent symptoms exist, which appear to be the principal cause of death, in that disease—the difficulty in deglutition and the difficulty of respiration, which sometimes threatens immediate suffocation: in the former the muscles of the throat and pharynx become spasmodically affected, by which volition ceases to have the control as formerly over those parts: the same

is the case in the latter, where the muscles of the glottis, by their spasmodic action, contract the whole diameter of that cavity, which by acting upon the *rima glottidis*, naturally a very small aperture, must necessarily (if the spasms are not relieved) close it, thereby producing suffocation and death. When we reflect upon the contiguity existing between the parts so spasmodically affected and the spine, may we not rationally infer, that the spinal irritation would be even more efficient in hydrophobia than in tetanus. As internal remedies are inadmissible in a great measure in hydrophobia, after it is perfectly formed, we must necessarily rely upon external remedies, if any thing further is to be done; and what external remedies so applicable as those applied to the spine? If I was called to prescribe for a case of hydrophobia, my first business would be to make an impression on the spine. I would irritate, and persevere in irritating, until a concentration of action should be produced, particularly in the upper extremity of the spine, which could not fail in greatly lessening, if not entirely removing, all the inflammation or irritation existing in the larynx or pharynx, or any of the adjacent parts. It appears perfectly demonstrable, and capable of being readily comprehended by the meanest capacity. The principle of it can be as easily understood as that of cupping or blistering, in curing pleurisy or any other pain to which the human system is liable. It is this principle of counter-irritation which effects so much in the practice of medicine and is the sine qua non in many of our diseases; and why should it not be in this formidable disease, which has baffled the skill of all the sons of Æsculapius from the time of Hippocrates to the present day. But this irritation has advantages, even far greater than that of simple counter-irritation. It dissevers, as it were, the concatenation of morbid action, existing between the extreme parts of the nervous system and the brain: and the nervous influence thus modified or completely changed cease to exert an irritating effect on the muscular system. And if the spine is actually morbidly affected in this disease, which I have no doubt it frequently is, then the remedies which relieve such a diseased state of the spine must necessarily change that morbid nervous influence which passes from the brain through the medium of the spine to every part of the nervous and muscular systems, imparting vigour and energy to all the external muscular tissues, which are at all times, while in health, perfectly subservient to volition. I forbear making any further remarks upon this subject, as this paper already exceeds the limits which I intended to give to it.

Permit me here to remark, that I am inclined to believe that the same remedy, if applied over the cervical vertebræ and persevered in for several weeks or months, would be found efficacious even in epilepsy.

25. *Use of Gold in Cases of Syphilis.*—On the 16th of May, M. Magendie made a very favourable report to the Royal Academy of Sciences of Paris on a work by M. Legrand on this subject. The author establishes the fact that gold acts favourably on the digestive organs, without weakening the patient, and at the same time produces an exhilaration of spirits. There are four methods in which it may be advantageously administered; 1. Metallic gold reduced to a state of extreme division; 2. The oxide or chloride with potash; 3. The oxide of gold with tin; 4. The perchloride of gold and sodium. Of these the last is by far the most powerful. It is applied by mixing three parts of the perchloride of gold and sodium with nine parts of any inert powder, and administered by way of friction on the tongue, in doses, varying according to circumstances, from 1-30 to 1-3 of a grain per day. As much as a grain has been given with safety, but this requires care. This is the least expensive of all the preparations of gold. Next to this in strength is the oxide precipitated by tin, then the oxide precipitated by potash, and, lastly, the gold in a state of division, which is the mildest, and at the same time the surest form under which it is administered. It is obtained by dissolving one part of perchloride of gold in fifteen parts of distilled water, and then pouring into it little by little a solution of four parts of proto-sulphate of iron, in sixteen parts of distilled water, until there is no longer any precipitate produced. The precipitates are then collected and preserved for use. This is administered by

friction on the tongue, in doses from one quarter of a grain to four grains per day. It may also be administered internally in a spoonful of conserve of any kind. The oxides are employed in the same manner, but in doses of 1-10th of a grain to one and a half or two grains per day. They are more frequently given internally, either in pills of six grains of oxide, with sixty grains of extract of mezereon, or any other extract of a milder character, divided into sixty pills, of which from one to ten are taken fasting, in a gradually increasing ratio, or in lozenges made of six grains of the oxides, with one ounce of powdered white sugar, divided into sixty tablets, to be taken in the same manner. The work, which makes a tolerably thick octavo volume, contains very copious illustrations of the subject, and also of the danger of the use of mercury, of which the examples are striking and well reported. M. Magendie, in conclusion, bestowed high praise on the assiduity and research of M. Legrand, and considered that he had established the beneficial nature of his remedy, although in administering it great attention must be paid to regulate the doses according to the strength and constitution of the patient. The work has been published some years, but has only lately attracted the attention of the Academy.

V. MEDICAL JURISPRUDENCE.

26. *Medico-Legal Examination of two Cases of sudden Death from Wounds.*—We are indebted for the history of these two cases to the *Edinburgh Medical and Surgical Journal* for July, as given by Alexander Watson, Esq.

"The following cases are interesting in a medico-legal point of view. They illustrate what is necessary in the investigation of such cases; and they also show the importance of attention to the minutiæ of medical evidence.

"It is necessary to premise, that in Scotland, when any death happens under suspicious circumstances, upon information being given to the Sheriff of the county, the case is immediately investigated. And on medical gentlemen being appointed to inspect the body of the diseased, they are simply told, "there is the body of a person suspected of having died a violent death; report upon the cause of death; and if by violence, state in what manner, and by what means." The task, therefore, is often difficult, and requires the utmost attention even to very minute particulars; for circumstances apparently trifling in the medical evidence often turn out to be of great importance in elucidating and connecting the moral evidence either of the innocence or guilt of the accused.

"The first case is that of Ann Rennie or Pollock, who resided at Gifford Park, at the south side of Edinburgh, whose husband was tried in the High Court of Justiciary, 13th February 1826, and was convicted of having murdered her, but contrived to strangle himself in jail previous to the day of his execution.

"The body of this unfortunate woman was inspected by Mr Newbigging and myself on the 13th November 1825. We were informed of her having died suddenly. She seemed to be about fifty years of age, of stout form, of very low rank, having lived in a small, dirty, ill-furnished house, having only some shavings and straw upon the floor, covered with a rug, for a bed. The clothes in contact with the private parts were stained with blood. No appearance of injury could be perceived on any part of the body externally. But upon separating the *labia pudendi* a wound about an inch and a quarter in length was observed upon the inner side of the right nympha. This wound was evidently recent, its surface being covered with coagulated blood. Externally, it consisted of a remarkably clean, straight incision, parallel with the nympha. Internally, the finger could be introduced in four different directions, to the depth of about two and a quarter inches in each; upwards and backwards towards the division of the iliac artery; backwards towards the tuberosity of the ischium; laterally towards the hip joint, and upwards towards the *mons veneris*. In each direction the wound was nearly of the same diameter, which readily admitted the finger, and had distinctly an obtuse termination. By injecting warm water into the large

vessels we found that none of them had been wounded, and the penetrating instrument seemed to have been forced only through the cellular tissue. The weapon had passed up to the peritoneum at the right side of the pelvis, under which there was a considerable effusion of blood, but had not penetrated it. Another very small, but also very clean, external incision was observed at the side of that above described.

"The cavities of the cranium, thorax, and abdomen were each examined, and their contents found to be quite healthy and natural. The hemorrhage, therefore, which had taken place from the wound was the only cause which we could assign for her death; and this, we knew from the nature and structure (erectile spongy tissue) of the parts cut, must have been profuse.

"Respecting the probable instrument with which this wound had been inflicted, it was obvious from the cleanness of the cut that the external part of the incision had been made with a remarkably sharp-edged instrument; and from the very obtuse termination of each of the internal wounds, their small depth, and the absence of any injury of the important neighbouring parts, it was highly probable that, though the instrument that inflicted the wound must have had a very sharp edge, it had a round or blunt point. Now, the only very sharp-edged instrument which I conceived such persons were likely to have possessed was a *razor*. This instrument has also a blunt point, and could not be inserted to a greater depth than two or three inches, on account of the fingers holding its blade in so using it. I also conceived that, after the external part was cut, any sort of knife could have been thrust into the parts, so as to have formed the wound above described. This I verified by experiment with a razor upon the dead body.

"It was proved by evidence, at the trial of the husband for this horrid crime, that two old rusty table-knives had been found in the house, as also two *razors*. One of these razors had its blade and handle covered with blood, and was found concealed in a piece of green cloth. These particulars rendered it almost certain that this had been the weapon used; so that the nature of the wound previously pointed out the probable instrument with much accuracy; though the circumstance of such having been found in the house was then quite unknown to the medical witnesses.

"In this case two other points occurred for the consideration of the medical jurist. Could she have inflicted this wound herself? Several circumstances which appeared in evidence rendered this impossible; 1st, She was in a state of intoxication at the time; 2d, Her husband was in the house along with her,—saw her state,—went for a surgeon, (Mr George White) and never alleged this at the time; 3d, No lethal weapon was found near her; 4th, The *pudendum* was a very extraordinary place for a suicide to inflict a wound.

"It was also alleged and pled for the prisoner, that she had fallen upon a piece of broken earthen-ware and cut herself. Could this wound, then, have been occasioned by such an accident? It was impossible to conceive that any broken piece of earthen-ware in common use could, by the woman accidentally sitting down upon it, have inflicted such a clean external incision, and produced the wound in the different directions above described. Such a portion of earthen ware, if sharp pointed and advantageously placed, might certainly have produced a pretty severe wound of the part; but it would have been a *lacerated* wound, not of any great depth, and not larger internally than externally, and in no part greater than the size of the wounding body; and it was very improbable that it would have had different directions internally.

"The second case, which is very similar to that just detailed, is that of Mrs Bridget Calderhead, who resided at Dunbar Street, near the Canal Basin, and whose sudden death was occasioned by a wound received on the morning of the 1st January 1831. Mr Mitchelhill, surgeon, had been called in to see this unfortunate woman soon after the accident, but found her dead when he arrived. At the request of the sheriff, I accompanied Mr Mitchelhill in the examination of her body, which we performed on the afternoon of the 1st January, in the Police Office, to which place her body had been carried.

"We found the body of this woman dressed in her ordinary day-clothes and

covered with a blanket. We removed her clothes very carefully. They consisted chiefly of a printed cotton gown, two flannel petticoats, (one blue, the other white) and a shift. These seemed almost quite new, and had no wound or tear in any of them, with the exception of the blue petticoat, in which there were some small worn holes. The lower part of all these garments had been drenched with blood, with which they were still wet.

"We then discovered that the hemorrhage had proceeded from a wound upon the middle of the left *labium pudendi*. Externally, this wound consisted of a very clean incision about three quarters of an inch in length, having a straight direction parallel with the margin of the *labium*. When the finger was introduced into this wound, it entered into a bloody cavity sufficient to have contained a small hen's egg; and from this cavity the finger passed to a greater depth in three different directions,—viz. upwards towards the under part of the *symphysis pubis*,—downwards towards the *perineum*, and backwards by the side of the vagina and rectum. Its greatest depth at any of these parts was between two and three inches. When the internal part of the wound was laid open, the divided orifices of several pretty large arteries and veins were seen, and particularly the divided extremities of the large artery going to the clitoris. The orifices of these vessels, as well as the internal surface of the wound, had the appearance of having been very clean cut by a sharp instrument. I removed the wounded parts, and preserved them in spirits.

"On the back part of the head there was the mark of a contusion, which had occasioned the extravasation of a small quantity of blood upon the anterior surface of the brain. The cavities of the chest and abdomen were quite natural.

"There could be no difficulty in this case in ascribing death to the excessive hemorrhage occasioned by the wound at the *labium pudendi*. We therefore gave this as our opinion as to the cause of death. The other question then arose, What was the probable instrument and manner in which the wound had been inflicted? From the straight, very clean incision externally, in length corresponding exactly to the breadth of many of the knives in most common use, as well as from the extent, cleanness of the wound internally, and its different directions, it appeared pretty evident, and most probable, that it had been inflicted by some kind of knife; and, indeed, it obviously could only have been produced by several thrusts of a knife in different directions. Some pieces of a broken wine-glass, however, had been found adjoining to some of the blood the woman had lost at the foot of the stair where she had received the wound. It therefore became a question of importance, whether or not the wound could have been occasioned by her having fallen upon these broken pieces of glass?

"1. Let us consider, Is it *physically possible* that any of the portions of the broken wine-glass, or of any wine-glass in common use, could have made such a wound? A portion of glass capable of forming such a wound must have been between two and three inches long, about three fourths of an inch broad, having a sharp cutting edge, and some degree of point; and it must also have possessed sufficient strength to permit its having been moved about and thrust in different directions, without breaking. To form such a piece out of a common wine glass, is evidently beyond the utmost ingenuity of man; far less, then, could such a portion have been formed by accidental fracture.

"The broken portion of glass found, consisted of the stalk of a common wine-glass without the foot, having at its upper part the bottom of the cup of the glass, of about an inch in diameter, attached to it transversely. Nearly the whole of the cup of the glass was broken off, leaving only a few fragments of the sides projecting upwards from the bottom which remained. The part of the stalk of the glass which remained was about an inch or an inch and a half in length, and its lower part had been clean broken across, leaving no sharp point. It was, therefore, quite obvious that this fragment of glass was completely incapable of forming the wound in question; for, the length, form, and sharpness which were requisite, were completely wanting; and any wound which could have been occasioned by it, must have been quite different in its character. A wound from such a piece of broken glass would have been a *lacerated wound*, not a *clean*

incision, not larger internally than externally, and could not have had several different directions internally. The upper end of the glass would have made several small lacerated wounds, while the lower end could not have made any wound at all. I therefore came to the conclusion, that it was physically impossible for the wound in question to have been produced by any portion of a broken wine-glass such as that found.

"2. But supposing that it had been physically possible for such a wound to have been occasioned by a fragment of broken glass, was it in any degree *probable* for it so to have happened in this particular case? In order to have accomplished this, the requisite portion of glass must have been standing ready to receive the fall of the wounded part upon it; the person must have either sat down, or fallen forward upon it, and her clothes, at the time, must have been completely out of the way, as there were none of them wounded; and moreover, the penetrating piece of glass must have thrust itself in different directions, making clean incisions internally, as well as externally. So that a concurrence of circumstances highly improbable, nay, almost miraculous, would have been required, in order that the wound in question could have been occasioned accidentally.

"From a careful consideration of the foregoing circumstances, I came to the conclusion, that it was neither physically nor morally possible that the wound received by this unfortunate woman, could have been caused accidentally by her having fallen on the portion of wine glass alluded to; and such, I believe, were also the opinions of Mr Mitchelhill, and of Dr Christison, who gave his opinion on the case at the trial. But it could not be denied *to be within the verge of possibility*, that the wound might have been occasioned by her having fallen upon some other piece of glass or sharp body, and therefore we each, individually, thought proper in giving our evidence at the trial to qualify our opinion upon this point, by saying that we considered it to be *scarcely possible and very improbable.*

"I was also asked at the trial whether or not this wound could have been produced by her having fallen accidentally on a pair of scissors; to which I stated, that I did not think it could by any of the scissors in common use. For, it is obvious that, to have produced such a wound, the blade or blades of the scissors when together, must have had the sharpness of a knife, as also the requisite length and breadth; besides being in an erect position when fallen upon, and afterwards moved in different directions to form the internal wounds,—a combination of circumstances which, as already mentioned respecting the glass, I conceived to be nearly impossible. I may add, that neither scissors nor pockets were found about the person or clothes of the woman.

"By the evidence adduced at the trial of two young men, brothers, of the name of Duncan, for the murder of this woman, it was obvious she had received a wound at the first floor of a common stair, almost immediately after which, she was precipitated headlong to the bottom of the stair. When she was there found, upon being set up, blood was observed trickling down her legs. Much stress was laid by the counsel for the pannels, upon there having been no blood seen upon the stair. But when it is recollected that she had on her two thick flannel petticoats, a gown and shift, which were each drenched with blood, it is obvious that the clothes, absorbing the blood when it first flowed, and her rapid progress head forward down the stair, easily explain this circumstance.

"The above are two cases very similar in their principal features, and appear to me to be highly interesting in a medico-legal point of view. From the details here given it is obviously necessary, in such cases, for the medical jurist, to form an accurate opinion whether the death had been occasioned by violence or by natural causes; and, if by violence, to say whether most probably by accident, suicide, or murder. These form considerations of the highest importance to medical men, as upon their evidence the lives of others frequently depend.

"In the above cases, it is also obvious, how very accurately the nature of the wound may point out the probable weapon of its infliction; and how very important this circumstance is, in establishing the criminal design with which such wounds may have been inflicted.

"In both of the above cases, I removed and preserved the wounded parts, by cutting out along with them a considerable portion of the soft parts; at the same time, carefully preserving entire the external wounds. This I consider to be a matter of considerable importance in all such cases; 1st, That the wounded parts may afterwards be examined more minutely; 2dly, That any lethal weapon or other sharp body afterwards found and supposed to have occasioned the wound may be compared with it; and, 3dly, That the nature of the wound may be seen by any other medical jurist who may afterwards be consulted in the case, either by the crown or in behalf of the accused.

"Before concluding, I shall make a few remarks on wounds inflicted in the situation of the cases just detailed. In both the above cases this part of the body seems to have been selected by the murderers to effect their design secretly. For in both, but particularly in the first, the wound was concealed to a superficial observer. And they may have had an idea, from the frequency of 'flooding' in females, that their deaths might have been supposed to have happened either from this cause, or by accidentally injuring themselves by sitting down upon some sharp body. For, it is a curious fact, that in both cases the probable murderers* were the first to go for medical aid to the deceased.

"Both cases also show, that wounds of the external parts of generation in the female may prove fatal by excessive hemorrhage; the peculiar structure of the parts, consisting of erectile spongy tissue, which is very vascular, giving rise to a continued, steady, though not very rapid, flow of blood.

"In both cases the defence set up by the pannel's counsel of the deceased having cut themselves by having accidentally sat down upon broken sharp bodies, was certainly plausible, and could only be controverted by the careful examination of the nature and form of the wounds, and a comparison of them with the alleged inflicting bodies. In both cases this was of great importance, as the deceased did not live to narrate the causes of their wounds; and in both, it appears to me, that the inferences deduced were beyond the possibility of doubt."

27. *Monomania—Phrenology.*—We give an account of a case thus headed as we find it in the Medico-Chirurgical for July 1831.

"In a late clinical lecture at St Thomas's Hospital, Dr Elliotson alluded to a curious case of monomania, which we shall here notice.

"The patient was a female, thirty-one years of age, who had been admitted for a nervous affection, but who was soon found to be monomaniacal. The propensity was to injure some part or other of her body, by internal muscular efforts, and not by attempts at cutting or maiming. The part of the body that fell under the monomaniacal displeasure was never long the same, but varied from hour to hour—commencing in one part whenever it had ceased in another, so that she had no respite from this harassing propensity. Her judgment on all points was good—she had no hallucination—and was conscious of the unnatural impulse which perpetually led to injure her own body. There was no reason to suspect a feigned disease. She had headach, drowsiness, sense of pressure on the head, as well as that of 'opening and shutting,' to use her own expression, behind the ears and round the back part of the head. Her breath was so offensive that it was impossible to inhale it without sickness. Her tongue was very much furred. She was sleepless. Her occupation had been that of teaching children, and working at her needle. Dr Elliotson considered this case as one illustrating the doctrines of phrenology—namely, that it was a case where the organ of destructiveness was in an excited state, and consequently where the 'instinct carnassier,' as Spurzheim [Gall?] would term it, was strongly called forth. Here, indeed, it was not a homicidal but a suicidal propensity that existed; yet the nature of both is the

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* "Though the Duncans got off by a verdict, by a plurality of the jury, of 'not proven,' yet there could be very little doubt of the guilt of one of them. It was impossible, however, to ascertain which, so that both were transported for *assault*."

same. The peculiarity in the present case, which attracted attention, was the pain and throbbing just over each ear, and extending posteriorly round the head. Every gentleman who attended to the case, was witness of this phenomenon. 'This (says Dr E.) was a very striking phrenological fact,' and he goes on to state his belief in the truth of the general doctrines of phrenology. 'I have examined (says he) the subject of phrenology most carefully and unremittingly, and have seldom allowed a day to pass without making some observations upon it; and, after thus examining it for ten or twelve years, I am more and more satisfied of the general truth of what Dr Gall has announced.'

"'With respect, however, to the *treatment* of this woman, our patient, I considered that an inflammatory affection of that part of the head, was the cause of the pain and morbid desire which she experienced. I cupped her behind the ears to twelve ounces, and gave her calomel five grains, twice a day, and put her on low diet. Leeches were again and again applied to that part. She was admitted on the 18th of January, and twenty leeches were applied to the seat of the pain every day until the 8th of February. From that time they were applied every other day for a fortnight. Her mouth soon became tender, and as that took place, her tongue became clean, and her breath ceased to stink. At last it began to smell of mercury, but the odour was quite changed in its character, and was supportable. She twisted her head less and less, and she slept more. She was observed to sleep several hours in the night. The pain in the head left her, and she now felt relieved from the disposition to strain and injure herself. She was a deformed woman, and the lungs and heart had hardly any room to play. She was subject to more or less bronchitis, and was seized with an acute attack from being placed near a window, and it was necessary, on account of this affection of the chest, to bleed her. She was bled to six ounces, recovered from the bronchitis, was now really well, and was to be presented on the following Thursday. On the Saturday, however, being in the ward, just as usual, she was seized, I understand (for I had left the hospital), with pain in the abdomen, and in a few minutes died. The friends came for the body before the inspection could be completed. The head was examined, and also the chest, but nothing morbid was found in either, except the adhesion of the dura mater to the brain above the meatus auditorius externus. On account of the friends waiting for the body, the examination of the abdomen was not proceeded with, and therefore the cause of death is shut up in mystery. Whether she died from a rupture of any thing in the abdomen, I do not know, but she was seized with pain there, and in two minutes was dead. I have no idea at all of the nature of the cause of her death, although I am quite satisfied that it was in the abdomen.'

"Dr Elliotson mentions some curious cases of monomania, and among others that of a lady who was constantly harassed with the dread of pollution from filth in the streets or houses. In another individual, the dread of typhous contagion was predominant, so that she would not allow her medical attendant to come in contact with her. We could add half a hundred instances of similar kinds from our own experience; but the narrative would be tiresome and useless. One of these is a lady who dreads the contagion of hydrophobia, and dare not walk the streets lest she should encounter a mad animal, or the saliva of one, which to her is as dreadful as the bite."

VI. MATERIA MEDICA AND PHARMACY.

28. *Iodide of Lead in Scrofulous Swellings.*—The attention of the medical profession has been recently called in the French journals to the *iodide of lead* as more efficacious than any other preparation of iodine in resolving scrofulous and scirrhous tumours. It is stated that patients who had previously been unsuccessfully treated with iodine and hydriodate of potassa administered both internally and externally, were rapidly improving under the use of the iodide of lead. The subject needs further investigation, and is well worth the attention of American physicians.

29. *Nux Vomica.*—It has been made a question in Italy whether nux vomica is stimulant or sedative. With a view to decide the disputed point, Professor Louis Beraudi made numerous experiments upon himself, from which he derived the following conclusion. We report the words of the author as given in the *Archives Generales* for April last. "As to the action of nux vomica in the healthy state, the flushed face, the redness of the tongue, the increased frequency and force of the pulse, &c. allow us to assert that the effects of this medicine, under the circumstances in which we have experimented with it, are those of an excitant, and that it exercises a stimulant influence over the vital powers."

30. *Effects of various Medicines upon the System in Health.*—In Vol. VII. of this Journal, pp. 192, 193, we noticed the experiments on himself of Dr Waltl, and in Vol. XI. p. 235, those of Professor Jœrg of Leipsic in relation to Water, of Chevy Lamel, to Valerian and Digitalis. We are enabled to present to our readers the results which Professor J. has obtained with other medicines. It is worthy of notice that he is assisted by a society consisting of twenty-seven individuals of different ages and sexes, upon whom the experiments are performed. We derive the following facts from the *Revue Medicale* and *Archives Generales.*

Nitrate of potassa. This was administered to eight persons, at first in small doses, which were gradually increased till the quantity taken amounted to one drachm or more during the day. In one instance the experimenter began with a drachm, and went so far as two drachms at a time. The conclusions of M. Jœrg were that nitre exerts an excitant action upon the kidneys, the alimentary canal and the skin. The diuretic effect is the most evident. The stimulant operation upon the digestive tube is manifested by an increased secretion of saliva followed by dryness of the mouth and œsophagus, and consequent thirst; by a keen sensation of hunger, and pains in the stomach similar to those which attend inflammation of this viscus; by eructations, and in large doses, by vomiting, colic of the small intestines, and liquid stools, and sometimes by constipation, when the medicine acts more especially upon the kidneys or skin. Its influence often extends to the large intestines, when it produces tenesmus without evacuation. Its action on the skin is much less certain, though evident in many cases. In moderate doses it operates on no other organs, never producing vertigo nor headach unless very largely administered. Nitre moreover produces a sensation of coolness in the mouth, œsophagus, and sometimes even in the stomach, at the instant when it is swallowed in the state of recent solution. This sensation continues for some minutes, and is then followed by a reaction proportionate in degree to the primitive effect. The more the pulse is diminished under the refrigerant influence of nitre, the more frequent it becomes when the reaction takes place. This secondary effect proves that nitre is not antiphlogistic. Such, at least, is the opinion of M. Jœrg; and he supports it by the further evidence, that the medicine undoubtedly stimulates, and may even inflame the stomach and bowels, and the urinary organs. But a direct restraining power over the general circulation is by no means incompatible with the property of local stimulation; and the general conviction that nitre directly diminishes the action of the heart and arteries, and is therefore useful in excited states of the circulation, is too strong to be overthrown by the authority of any single individual. That if largely given it may inflame the stomach, and thus produce secondary excitement of the heart, after its own direct action has ceased, there can be no doubt; and this fact should always be borne in mind when it is administered as an antiphlogistic remedy.

Hydrocyanic acid (prepared by the process of Vauquelin—essentially the same with that of the Pharmacopœia of the United States). Given to four members of the society in the dose of from half a drop to three drops in an ounce of water, it uniformly produced heavy pains in the head, dryness of the fauces, and an unpleasant scratching in the throat similar to the sensation produced by eating too freely of dry nuts. By experiments on brute animals it was proved that a principal effect of the acid is to decompose the blood, which becomes dark, and accumulates in the veins and right cavities of the heart. As the result of his researches, M. Jœrg states that "hydrocyanic acid acts with extreme rapidity and

violence upon the brain and nervous system, but its effects are more prompt and intense upon the encephalic nerves, than on those of the ganglionic system. The momentary excitement of the brain is followed, more or less rapidly, by a diminution of the nervous action, and even by death. When it does not speedily produce death, it determines inflammation of the trachea, and especially of the larynx. Under certain circumstances it appears also to act on the kidneys, and to increase the urinary secretion. Hydrocyanic acid occasions death in two ways; first, by a total and instantaneous extinction of sensibility; secondly, by a paralysis of the respiratory nerves, or, in other words, by asphyxia.

Serpentaria.—From the experiments of M. Jœrg it appears that this medicine excites the intestinal canal and its appendages, produces congestions in all the viscera of the abdomen, and determines the production of flatulence rather than the secretion of mucus. With the greater number of experimenters it produced eructations, nausea, vomiting, a sense of weight or pain in the stomach, rumbling and colicky pains in the small intestines, frequent expulsion of flatus from the bowels, tenesmus without fecal evacuation, some tenacious stools, loss or increase of appetite, swelling of the belly, especially about the epigastric region, and, finally, itching about the anus. Sometimes M. Jœrg observed marked increase of the natural heat, especially about the head, a sense of weight, and even pain in this part. In some cases it increased the activity of the circulation, and in others acted as a diuretic. The infusion he believes to act especially on the brain, the powder on the gastro-intestinal mucous membrane.

Camphor.—From numerous experiments M. Jœrg infers, that camphor in the first place excites the alimentary canal and the brain, and secondarily extends its action to the genito-urinary organs, to the skin, and the organs of the circulation, which it stimulates. He considers it in all cases an active stimulant, increasing the heat of the body; often producing sweat; accelerating the circulation and augmenting the force of the pulse; modifying in a marked manner the secretion of urine, both as regards its quantity, and even more frequently as it regards its composition; and actively stimulating the organs of generation. This last effect he observed in the most evident manner in several persons submitted to experiment. By consulting this Journal (Vol. IX. p. 442) it will be seen that Professor Jœrg was anticipated on this point by Dr Scuderi of Messina, who states expressly as the result of his experiments that camphor acts electively on the genito-urinary apparatus, producing erethism of the generative organs, &c. This effect is considered more important, as camphor is generally thought to calm irritation in these parts, and is often prescribed in strangury and similar complaints. The influence of small doses of camphor is not prolonged more than three or four hours. M. Jœrg thinks in relation to the dose that from half a grain to a grain administered at suitable intervals is sufficient in most cases. There is no doubt that in such doses it sometimes produces a calming effect in cases of moderate nervous irritation; but with a view to its full influence upon the system, the quantity is altogether insignificant.

Castor chosen with the greatest care and given in the dose of twenty grains was found to produce only some disagreeable eructations, without any appreciable effect upon the system. Hence it is inferred that the sentence of exclusion which has been generally pronounced on this drug is just.

Musk appeared to be much less diffusible and penetrating than is generally believed. It nevertheless extends a powerful action to the intestinal canal, and particularly to the brain. Its first effects on the healthy system are manifested by eructations, weight at the stomach, diminution or increase of appetite, dryness of the œsophagus, heaviness of the head, vertigo, or cephalalgia. Its secondary effects are much more observable on the encephalon than the alimentary canal. They are frequent gaping, somnolence, weakness and a sense of heaviness throughout the frame, and, finally, profound sleep, which continues for some time. In very large doses musk produces trembling of the limbs, and even convulsions. It moreover sensibly increases the activity of the circulation, rendering the pulse fuller and more rapid. Most writers state that the sweat, urine, and feces of persons who have taken musk have a strong odour of this substance.

M. Jœrg concludes from numerous and careful experiments that this effect does not take place; and that the smell is attributable solely to the frequent eructations, by which the clothes become impregnated.

The bean of St Ignatius.—This medicine first increases the secretion of the salivary glands, then produces nausea, weight and pain in the epigastrium, increase or diminution of appetite, frequent eructations, colic, rumbling in the bowels, constipation or looseness, and finally a sense of heat and itching at the margin of the anus. After these primitive effects, are observed heaviness of the head, vertigo, heavy pains in the occipital, frontal and temporal regions, and inflammation of the eyes, accompanied with a considerable increase of the secretion of the glands of Meibomius. Finally prostration supervenes, with great somnolence, and general apathy. These secondary effects are sometimes followed by an obvious acceleration of pulse, great oppression, and a tingling, smarting sensation in the urethra. A singular character of the medicine is that its effects disappear and are reproduced once or twice after a considerable period, which varies with the dose and the constitution of the individual. M. Jœrg thinks it applicable to cases of stomachic and intestinal debility, attended with chronic induration of the mesenteric glands. Great advantage may be expected from it in weakness of vision and atony of the nervous centre. In most cases half a grain given once in the twenty-four hours is sufficient: but as the medicine acts with greater difficulty on certain individuals, the quantity should be increased till it begins to operate. According to M. Jœrg, the tincture is less active than the powder.

VII. SURGERY.

31. *Arterial Varices.*—The following notice of a morbid dilatation of arteries, improperly termed *arterial varices*, is from the *Transactions Medicales* for October 1830, and was presented to the Academy of Medicine on the 24th September, by the celebrated Dupuytren. He considers it always a very serious, but happily a rare affection.

"Twenty years ago, Pelletier had charge of a young female, who had a remarkable dilatation of the temporal and occipital arteries, throughout their whole course. Recourse was had to ligatures upon the trunks, but unsuccessfully; successive hemorrhages supervened and fatally exhausted the patient. On opening the body, all the arteries of the head were in a state of dilatation, and also many of the arteries in the extremities. About twelve years since, a similar case occurred to M. Dupuytren: the dilatation involved equally the arteries of the head. The primitive carotid artery was tied, and the patient happily recovered.

"The individual, who has furnished the anatomical preparation at this time presented to the Academy by M. Dupuytren, came under his care two months ago. A man, sixty years of age, was received at the Hotel Dieu, with two aneurismal tumours in the ham, a cancer of the leg, and an erectile tumour on one of the toes. Amputation of the thigh was performed. On dissecting the limb, the existence of two aneurismal tumours in the ham were noticed, in a collapsed state, and completely empty of blood, not even containing coagula. The popliteal artery, which was the seat of these tumours, had the diameter of the abdominal aorta. The tumours were about an inch distant from each other; the superior one was of the size of a large almond, the inferior of that of a pigeon's egg. The dissection of the parietes of these tumours exhibited a manifest dilatation of the internal and external tunics of the artery. The fibres of the middle coat were frayed and separated; the internal coat was pushed into these intervals, so as to form part of the tumour; the middle coat was evidently in a diseased state throughout the whole of the tibial and peroneal arteries; it was thickened, yellowish, and its fibres were separated, and as if (èraillées) frayed. The internal and

external coats had undergone no alteration. The anterior and posterior tibial and peroneal arteries equalled in dimension that of the femoral artery, so that M. Dupuytren could easily introduce his finger into their cavities. The plantar arteries, through all their course, were ten times at least their natural size; their parietes were double their normal thickness, depending principally on the enlargement of the middle coat, as nothing morbid was to be remarked in the other coats. All these arteries presented, besides their state of general dilatation, swellings here and there, which exactly resembled groups of varices. Hence M. Dupuytren has proposed for this disease, the denomination of arterial varices. M. Dupuytren recollects that he and M. Dubois met, some years since, with a case of a similar character. M. Breschet also possesses a similar fact, which he will no doubt present to the Academy. Scarpa absolutely denies the possibility of the existence of this sort of aneurism, or rather, of this general dilatation of a part of the arterial system, so as to resemble venous varices. The fact, which M. Dupuytren now exhibits, leaves no doubt of the existence of this malady. The arteries then are susceptible of the dilatation which is so frequently observed in veins."

32. *Laryngotomy successfully performed during the existence of Goitre.*—In the *Archives Generales* for November 1830, is recorded a case by M. Willaume, chief surgeon of the Military Hospital at Metz, of a female, aged twenty-eight years, at the fifth month of pregnancy, and having a goitre of considerable size, who had swallowed, while taking some soup, a fragment of bone, which passed into the trachea. Severe symptoms supervened, generally in paroxysms, by which her health was so much impaired, that an operation became necessary to preserve life. The enlarged thyroid was depressed as much as possible, and with some difficulty the operator succeeded in dividing the crico-thyroid membrane with a bistoury, and on withdrawing the instrument, he divided without difficulty the thyroid cartilage on its median line, and through its whole length(!!). The patient was not relieved; a violent, threatening attack of dyspnœa supervened, which after some time ceased. The ventricles of the larynx were examined by introducing the ring finger into the wound, but no foreign body was detected. A probe was then passed down the trachea, and it encountered some resistance from the foreign body, which after some movements was detached, and very soon after a violent paroxysm of coughing, it was expelled, with a large quantity of mucus. The wound readily healed, the voice was not impaired, and an accouchement occurred at the regular period.

33. *Cæsarean Operation.*—In the *London Medical and Surgical Journal* for January 1831, Mr John Stirling has given the details of a case of a deformed female on whom he performed the Cæsarean operation, after labour had existed for some hours. The child was saved; the mother died in sixty-six hours after the operation. This patient was bled from the arm, twelve hours after the operation, when there was no tenderness of the abdomen and her "pulse 130 and rather sharp"(?).

34. *Section of the Sciatic Nerve.*—Wounds of the nerves being still regarded by many surgeons as peculiarly dangerous, and the source of many accidents of the most serious importance, it is right to fix attention on injuries of nerves when occurring in individuals free from particular disease. In the *Revue Medicale* for March, we find an extract from the *Osservatore Medico di Napoli* for December 1830, exhibiting the result of divisions of the great ischiatic nerve by Dr Malagadi upon animals, and on the human subject. This surgeon was consulted by a man aged 31 years, who for eleven years had been afflicted with a violent pain in the foot and leg of the right side, which interested the different nervous branches on the superficial portions of the limb. Considering the little amelioration in the symptoms, and the absence of severe exacerbations, notwithstanding the number and variety of medicinal means adopted for eleven years, he concluded that this was a case not of simple exaltation or depression of nervous influence, but of structural alteration in the nerve. Hence he determined that excision of a portion of the nerve was the most desirable measure to be adopted. To deter-

mine, however, more particularly the effects of this operation, he had recourse to some experiments on dogs, in which the nerve was divided, and the animal examined ten months after the operation. He concludes,

1. That the section, practised at the inferior third of the sciatic nerve, causes a paralysis, and consequently atrophy, but not gangrene of the muscles of the leg.

2. This paralysis extends from half the leg to the extremities of the toes.

3. The leg retains the power of sustaining the body and of motion, because the articulation of the knee and its muscles are not injured.

4. The most certain method of preventing the reunion of the two extremities of the divided nerve, and consequently the return of the sensibility and motion in the foot, is the excision of a portion of the nerve, which insures the utility of the operation. Encouraged by these results, M. Malagadi determined to operate. On the evening previously, a bleeding and purgative were prescribed. On the 5th of March 1828, the patient being placed in a recumbent position on the abdomen, the requisite incisions were made over the sciatic nerve on the posterior part of the limb, at about four fingers' breadth above the popliteal region, and corresponding to the separation of the flexor muscles. The nerve being exposed and separated from the cellular tissue and the vessels which surround it, was divided at the superior angle of the wound by means of a curved, probe-pointed bistoury. The patient was immediately seized with a universal tremor, and a very violent lancinating pain, which extended rapidly from the injured portion to the brain, following the course of the vertebral column; almost immediately syncope ensued, but it was of very short duration. On his recovery, the nerve was again divided at the inferior angle of the wound without the least sensation being excited. The wound was dressed and the patient placed in bed with the limb extended, not to prevent a reunion of the nerve, for an inch and a half of it had been excised, but to prevent the approach of the extremities, so that adhesions to the neighbouring parts might not give rise to stretching of the nerves, and hence to a renewal of the pain. The sufferings which existed previously to the operation, almost immediately disappeared. The half of the leg, and the whole of the foot were paralyzed, and a sensation of pricking and itching were felt in the same parts. The sensibility of the internal part of the foot and leg was very obtuse. After five months, the cure was complete.

35. *The high operation for the stone.*—M. Civiale, candidly acknowledging that the operation of lithotrity is not adequate to all cases of calculus in the bladder, especially where the stone is very large, or the soft parts altered in structure, has devoted much attention to the comparative merits of the different modes of lithotomy. He is convinced of the superiority of the operation *above* the pubis when performed in the simple manner characteristic of modern surgery. He succeeded in extracting with safety to the patient a very large calculus which had been long embedded in the bladder, and which could not have been removed by the usual operation below the pubis. He believes, with many other authorities, 1st, That the high operation can successfully be performed under circumstances which appear to contra-indicate it; 2d, That the flow of urine through the wound is no obstacle to cicatrization; and 3d, That in some cases full of danger, the operation may be successful.—*Revue Med. for July.*

36. *Diffused false aneurism.*—In a case of diffused aneurism from a punctured wound of the femoral artery, where it perforates the adductor tendon, Dr Mott was under the necessity of securing the external iliac artery. This was done with success. The diagnosis was difficult. For details, vide *American Jour. of Med. Sci. for August last.*

37. *Traumatic erysipelas.*—M. Larrey has published one volume of Clinical Surgery, which must be valuable from the known talents and extensive experience of this deservedly celebrated surgeon. The volume is reviewed at length in the July No. of the *Medico-Chirurgical Review.* In traumatic, and even in

spontaneous erysipelas, he strongly recommends the actual cautery; as producing little pain, diminishing the heat, redness and tension of the affected parts. He says, it is never followed by gangrene or suppuration, but ends in small dry eschars which leave no sensible cicatrix, and rapidly improves every symptom.

38. *Traumatic tetanus.*—Amputation, after tetanic symptoms have appeared in severe injuries of the limbs, has been considered not only a useless but dangerous practice. Larrey, however, relies greatly on this practice—it is his chief dependence, and he is induced to ask whether in tetanus, arising from a slight wound of an extremity, amputation should not be resorted to as soon as the tetanic symptoms appear, other measures being very doubtful?

Where amputation is impossible, incising the wound or cicatrix is recommended; and also the actual cautery, iron heated to incandescence, which has speedily effected the most surprising and unexpected recoveries.

39. *High operation.*—We have given above a favourable notice of this operation. The English surgeons are less disposed to recommend it. The following is its character in the view of Mr Brodie as published in the *London Medico-Chirurgical Review.* "I have seen it done several times, and it was always what I call a bungling operation. It is more difficult, more hazardous, unjustifiable, except where the stone is too large to be removed by an incision in the perinæum. In such a case, I think the recto-vesicle operation is more applicable."

40. *Lithotomy in the female.*—This may be performed very easily by an incision downwards and to one side, or by an incision upwards, and then dilating the passage without cutting into the cellular membrane. This last, says Mr Brodie, is the best method—but there is much danger of subsequent incontinence of urine. Mr B. prefers *dilatation* to cutting. "In my cases of dilatation the patients did not ultimately suffer from incontinence of urine, though they had some for a time after the operation."

41. *Removal of a tumour, fifty-six pounds in weight.—London Med. and Phys. Journal.*—The patient, Hoo Loo, was a Chinese labourer, who was induced to visit England for the purpose of having an enormous tumour removed from the anterior and inferior part of the abdomen, which, it is stated, was of a nature and extent hitherto unseen in England, although a particular description is not given. It appears, that it began originally in the prepuce, but that it did not involve the body of the penis, the cord or testicles—but enlarged so as eventually to extend from a little below the umbilicus to the perineum near the anus. A consultation was held at Guy's Hospital by Sir A. Cooper, Mr Key, and Mr Callaway, and it was determined to attempt the extirpation, endeavouring to preserve the genital organs. Mr Key was the operator and is said to have distinguished himself on the occasion. Suitable flaps were made for covering the penis and testicles, but it was soon found that the attempt to preserve these organs would consume too much time, and it was abandoned. A long period nevertheless elapsed before the conclusion of the operation, and by the time the tumour was entirely separated, and the exposed parts closed over, an hour and forty-four minutes had passed. This protraction was chiefly occasioned by the intervals which were allowed for the recovery of the patient from the fits of exhaustion which supervened. Complete syncope occurred twice, and during the whole of the latter steps of the operation he was in a state of fainting. The quantity of blood lost was variously estimated, and although chiefly venous and not large, was, in the opinion of the operator, the immediate cause of death. The number of large veins divided was immense, but only three small arteries, besides the two spermatic, were taken up. Syncope was almost continuous during the last half hour; a complete fit of fainting came on after the removal of the tumour, from which the patient scarcely reacted, notwithstanding the use of all the approved methods of resuscitation; transfusion, and artificial respiration not excepted. The patient did breathe after the operation, but that is as much as can be said. He was 32

years of age, and the tumour had existed for ten years. Its weight was conjectured to be about 70 pounds, but after its removal, it weighed 56 pounds. The circumference of the mass was four feet, that of the neck two feet, each side of the neck, which was about equilateral, measuring eight inches. When the patient stood upright, the lower part of the tumour reached considerably below the knees. It was decidedly steatomatous.

Post mortem examination revealed no diseased condition of the tissues and organs.

42. *Lithotrity.*—This operation is gaining favour by the silent but irresistible testimony of facts, and this even in England. Our readers are acquainted with the fact, that the operation has been successfully performed in that country by Baron Heurteloup, who has published an account of fourteen successful cases, which occurred to him in little more than eighteen months. The reviewer in the *London Med. and Phys. Jour.* styles the operation "one of the most important improvements in modern surgery," and we trust that American surgeons will no longer refuse credence to the testimony of their European brethren, but at once follow the brilliant and successful example already presented by their countryman, Dr Alban G. Smith. (Vide our last number.) It only requires suitable instruments, and moderate industry to render any one at all qualified for the practice of surgery, a skilful operator in this branch of his art.

43. *Excision of a Portion of the Rectum.*—In former numbers of this Journal we have noticed Lisfranc's operation of extirpating portions of the rectum for cancer and other unmanageable affections; an operation which many regard as dangerous and unpromising. The following interesting and successful case has occurred in England and is recorded in the *Lond. Med. and Phys. Journ.* for April last. Anne Kay, aged thirty-eight years, the mother of three children, the youngest being born several years ago, has for the last two years experienced much uneasiness and pain about the rectum, loins, &c. with occasional discharge of blood from the bowels. For the last six months has been the subject of amenorrhœa. Upon examination of the rectum, on her admission into the Middlesex hospital in December last, it was felt to be indurated and ulcerated for the extent of two inches; but the finger could be passed beyond the hardened part into perfectly healthy structure. Various remedies were ineffectually tried, and as the patient's suffering continued to increase, Mr Mayo determined to remove the diseased part.

The operation was performed on the 25th of February in the following manner. The patient was laid upon her side, with the hips and knees bent. The fingers being then introduced into the rectum, the knife was plunged into the perineum, on one side of the bowel, and, an incision of some depth being thus made laterally, the dissection was continued forwards from thence, so as to separate the vagina from the rectum. The dissection was then continued entirely round the rectum, including half an inch of integument, with the sphincter muscle. By this means, a length of two inches and a half of the extremity of the rectum was separated from the adjacent parts: it was then cut off with the scissors from the sound rectum above. The operation was performed slowly, and the vessels, about nine in number, were tied as they were divided. The patient lost about twelve or fourteen ounces of blood.

The case has gone on most favourably. Two hours after the operation, when the smart of the wound had began to subside, the patient observed that she felt entirely relieved of the pain and distress from which she had suffered so many months.

The appearance of the wound is singular: the extremity of the bowel is not more than half an inch from the cut edge of the skin, and the intervening granulations are healthy, and cicatrizing rapidly. The bowels act regularly once a day; the patient being conscious as formerly of the presence of feces in the rectum, about five minutes before they are discharged.

When the part was examined, it was found to include a third of an inch of

healthy intestine; the disease extended from the anus full two inches along the bowel, which was thickened and indurated, and the middle inch of the diseased portion was in a state of ulceration.

In the June number it is stated that this woman is much improved in every respect: the general health is better, and the sufferings she experienced from the disease are entirely removed by the operation. The most important point to notice is, that she can perfectly retain solid feces. When under the influence of purgative medicine, the contents of the bowels are discharged rather quickly, but it seems far from impossible that in time the firm cicatrix of the wound, assisted by the action of the muscular fibres of the bowel itself, will form a sufficient substitute for the sphincter muscle which has been removed.

44. *Empyema. Paracentesis Thoracis.*—Mr Mayo performed the operation of paracentesis thoracis for empyema, which rapidly formed in consequence of a blow on the chest, fracturing the ribs. The accident occurred to a boy, aged fifteen years, on the 21st of March; on the 25th there were rigors; on the 30th it was evident the patient breathed only with the right side; the heart could not be felt on the left side of the chest, but beat strongly in the epigastrium and upon the right side. No fullness however was evident on the left side, and the breathing was not very oppressive. On the 14th of April fullness and fluctuation were evident. An oblique opening was made and eighteen ounces of pus were discharged; a considerable quantity of cotton wool (something more appropriate might have been employed) was then placed upon the wound, with the ordinary rib roller to support it. The pus continued to flow for several days; the breathing was relieved; the heart could soon be felt in its natural situation; the appetite returned; the tongue became perfectly clean; sleep easy and refreshing, and the strength greatly improved. The discharge is now (May 17th) daily diminishing and the boy likely to do perfectly well.—*London Med. and Phys. Journ., June* 1831.

VIII. MIDWIFERY.

45. *Relation of a case of labour in a female with deformed pelvis. By George Fox, M.D., of Philadelphia.*

On Tuesday, June 14th, 1831, I was called about seven A.M. to see Mrs R——— in labour with her first child; this is stated to have commenced about one A.M. The pains, as are usual in the commencement of labour, were feeble, short, and at about ten minutes interval. Upon examination per vaginam, the projection of the sacrum was immediately felt; not, however, suspecting the deformity which was subsequently found to exist, this was not at the time particularly attended to, the os uteri was sufficiently dilated to admit the finger and feel the protruding membrane. I was struck with the form of the sacrum, the rectum being very much distended with feces, thought it might in part be occasioned by this. Directed ol. ricini one ounce, which was taken immediately; at noon found, upon examination per vaginam, that the membranes had ruptured, the head presenting: she was not aware at what time the waters had escaped. In the evening the rectum being unloaded by the operation of the oil, I made a more minute examination, and was sensible of great deformity of the pelvis, though not to the extent we afterwards ascertained, the pains not being at all active. As it was late I determined not to ask the assistance of my medical brethren till the following morning; therefore directed an anodyne (which I subsequently ascertained was not taken from her dislike to laudanum and fear of its retarding her labour) and left her for the night. Was called up about one o'clock the next morning, her pains being more frequent and stronger; found the os uteri rather more dilated, and the external parts very rigid, preventing an accurate examination of the pelvis; I remained with her some hours; subsequently called

upon Dr James, who met me in consultation at half past eight A.M. In consequence of the rigidity of the soft parts, we found it impossible to make any satisfactory examination; we therefore concluded it best she should be bled and take an anodyne—that we would meet in the afternoon: she was accordingly placed erect in bed and bled to incipient syncope, which was after losing about fifteen ounces; twenty drops of laudanum were soon after given. In the afternoon Dr James again saw her: from as accurate an examination as we were capable of making (for the external parts still continued rigid, though somewhat relaxed since the bleeding), we came to the conclusion that there were not at most three inches in the antero-posterior diameter; that laterally there was rather more room, on the left more than on the right: the posterior lip of the os uteri was swoln and succulent, forming a cushion in front and a little below the projection of the sacrum; the head was presenting to the left side, its exact position could not be determined. On account of the unusual interest of the case, Drs Meigs and Lukens were invited to attend; Dr James not feeling quite well did not meet us that night: the result of the examination of these gentlemen was, that there was not more, if as much room at the superior strait as we supposed; they coincided with us in the opinion that it was impossible the child should be born alive per vias naturales: our next object therefore was to ascertain whether or not the child was living; this was rendered certain by the application of the stethoscope; the pulsations of the child's heart were distinctly perceived, whilst the placental soufflet was also very evident; the pains continued as they had been most of the day, recurring every four or five minutes: we remained with her some hours, when we ordered her an opiate and agreed to meet at four A.M. The result of this meeting was, that as the proper means of proceeding was of such immense importance, further advice should be had, and that we should meet at half past eight o'clock A.M. Dr Physick was called on but was confined to the house by sickness; Dr Dewees was also called for, but was absent from the city. At half past eight A.M. Dr James met us, Dr Hewson being added to the consultation: it was agreed as before stated, that it was impossible the female should be delivered of a living child per vias naturales; the question then was, whether the child should be sacrificed to save the mother's life or an attempt made to save both mother and child. It was concluded, as the strength of our patient was good, her pulse only eighty-four and strong, as there were no symptoms of constitutional irritation, no injury would result from a few hours delay; we therefore separated to meet at twelve M.

The consultation was held at the appointed hour; by this time, after repeated and the most accurate examinations that the case admitted of, we were unanimous in the opinion that there were not more than two inches in the antero-posterior diameter, most probably only one inch and three quarters; the different methods of proceeding which have been proposed in similar cases were duly and maturely considered, viz. the division of the symphysis pubis, the cesarean operation and cephalotomy; the first was considered inapplicable to the present case; the cesarean operation was thought to be attended with so much risk to the mother as almost to be necessarily fatal, some of the most distinguished surgeons being decidedly opposed to its performance. Dr Physick, who was called upon in the course of the morning by Dr Meigs and myself to ask his opinion on the propriety of this operation, was decided and positive in his opposition to it; under the weight of such authority the idea of the cesarean operation was abandoned. It was therefore concluded after the most mature deliberation and upon viewing the case in all its bearings, that the life of an imperfect being (for it was again ascertained that the child was living and apparently vigorous) should be sacrificed to save the life of a wife, a daughter, and that the operation should be immediately commenced, by opening the child's head, breaking up the brain and allowing some hours to elapse before attempting extraction; at my request, with the approbation of our colleagues, Dr Meigs consented to perform it; Drs James and Hewson having professional engagements were at this time obliged to leave us, to meet again at six o'clock, P.M. Preparatory to the operation, the rectum was unloaded by an enema, the urine drawn off by a catheter, and an anodyne

administered; her pulse was one hundred and four: the consent of the patient, her husband and friends having been obtained, she was placed at the foot of the bed (which had previously been adjusted), the hips being on the edge, so that the perinæum was perfectly free, an assistant supporting each leg; Dr Meigs then took his seat directly opposite, made another examination preparatory to beginning the operation; after having some time carefully examined, he called me, and subsequently Dr Lukens also, to make another examination, the result of which was, that the operation of cephalotomy, if not altogether incompetent to the delivery, would be attended with as much risk to the life of the mother as the cesarean operation; it then appeared to us impossible that the cranium should be removed and the base brought through the superior strait, without the most violent exertions and great danger of lacerating the cervix uteri, vagina, &c.; that taking this view of the case, it was better to call our colleagues again together, at as early an hour as possible, to reconsider the propriety of performing the cesarean operation: the child was again ascertained to be alive.

Accordingly at five P.M. we again met; Dr J. Rhea Barton at this time saw our patient; our first object was to ascertain respecting the life of the child, and upon applying the ear and the stethoscope, no pulsation was perceptible in any part of the uterine region; it was then unanimously agreed (the female not having felt the child for two or three hours) that it was dead: there was now no farther hesitation as to the propriety of cephalotomy, which was immediately performed by Dr Meigs, who employed the utmost assiduity and care in the management of the operation, on whose skill and unwearied attention the success of it is mainly dependent; to him I am also indebted for the following account of the difficulties, &c. which were experienced in the accomplishment of the delivery of the child.

"The woman being conveniently placed on her back, with the perineum projecting beyond the edge of the bed, and the legs and feet properly supported by an assistant on each side, I took my seat for the purpose of proceeding with the first part of the operation, the perforation of the cranium.

"A suture crossed the pelvis from front to rear, but its edges were overlapped and could afford no facilities for the operation. This suture was the right leg of the coronal, as was afterwards ascertained.

"With Botschan's improved craniotomy scissors I endeavoured to penetrate the solid bone in the centre of the strait, but owing to the narrowness of the passage, and the constant interference of the os uteri, the lips of which were nearly in contact antero-posteriorly, I dared not to give to the instrument that rotatory or drill-like motion which was necessary, for without such a movement it was impossible to make any progress, as the head rose upwards and rolled freely in the superior basin whenever any considerable pressure was applied to the perforator, though the womb seemed to be pretty firmly contracted at the same time.

"Finding this mode of proceeding unsafe for the woman, I begged permission to leave her a few minutes in order to procure an instrument better adapted to the purpose in hand. Accordingly, Mr Rorer furnished me with a large trocar with a triangular point, and having guided it with two fingers to the proper situation and kept it securely by retaining the fingers in contact with the head, I was able gradually to drill a hole through the bone, the head being pressed from above against the strait by Dr Lukens. Two other perforations were made near to the first one in the same cautious manner: after which I again introduced Botschan's scissors, and having opened them, found that I had made an incision of about an inch and a half in length. Through this a slender blunt hook was introduced into the cavity of the cranium and the brain very freely broken up.

"The poor woman, who was already very much exhausted by many hours of labour, now took an anodyne and was left to her repose, in order that the medullary matter might be gradually pressed out, and the cranium allowed to collapse so as to come more in reach of the instruments.

"At ten o'clock P.M. I again met Drs Fox and Lukens, and the woman being disposed as before on her back, I introduced a crotchet into the cavity of the cranium and spent some time in extracting the medullary substance, not much

of which seemed to have been expressed during our absence; the head still continued on the superior strait, except a portion of the hind head which was passed down into the excavation to the left of the promontory, where there appeared to be the largest space.

"Having removed a considerable quantity of the cerebral substance, I fixed the tooth of the crotchet into the cranium, and guarding it on the outside with a finger, exerted a very great amount of force, which had not the least effect in drawing it lower down.

"It soon became evident to me, from several trials of this kind, that no exertion of mere strength could be of any avail to drag away the head, and if it was to be delivered at all, it must be piece meal: but as the child had been dead only a few hours and its skull bones were still firmly united to their inner and outer membranes, it will be readily conceived that the removal of the bones was a most difficult matter, not only on account of the firmness of their connexions but also on account of the narrowness of the passages, the great hardness of the skull, and the great danger of wounding the parts by the slipping of the crotchet, which, under the circumstances, could be best applied on the interior of the skull, and from the swoln and succulent state of the lips of the os uteri, whose inner surfaces were in contact, and presented to the touch the idea of a long fissure instead of preserving a round or oval form: last and not least, the perineum was so strong and unyielding that the greatest inconvenience arose from its pressing the fingers against the arch of the pubis with such force and so painfully that no one could endure for any great length of time to keep up the necessary extension.

"Being possessed of one of Dr Davis's osteotomists, I expected to derive great advantages from its employment in the case, and accordingly introduced it with the view of cutting away portions of the bone, but the constricted state of the parts rendered it impossible to make use of it consistently with a humane regard to the safety of the patient.

"Having ascertained, then, by fair experiment, that mere force could do nothing in the delivery, I resolved to pursue the intention of breaking up the head by means of the crotchet; and it was with great fatigue to the woman, that I picked out altogether about as much as would equal the size of one of the parietal bones, the portions consisting of fragments of the right parietal and part of the frontal bone.

"Finding towards morning, that the progress of the operation was exceedingly slow, I went out and procured a pair of straight tooth forceps, with which I could take a firm hold of the bone and twist off portions, which after they were broken away, often took a good while to separate from their adhering membranes.

"At four o'clock, the woman was so much fatigued that we agreed to give her an anodyne draught, and leave her to recover strength by means of a few hours rest.

"The attempts at extraction had now continued from 10 o'clock P.M. until 4 A.M., and I think the whole of the bone removed would not much exceed in quantity one parietal bone at full term; it seemed impossible to proceed with greater rapidity, and I often admitted a doubt, whether I should be able to deliver her before death should come to her relief.

"Throughout the day on Friday, the attempts at extraction were repeated in presence of the gentlemen last named, and also of Drs James and Hewson, who became fully satisfied, that no greater progress could at present be made, considering the circumstances of the woman.

"Early in the afternoon, symptoms of fever became very manifest, the pulse rising to 112 strokes in the minute, with considerable firmness and volume, this state of the circulation being coincident with a distressing eructation, partaking somewhat of the character of singultus, a great distention of the abdomen, as well as of the womb itself, from gases extricated within them. She complained, also, of great soreness of the belly, on which account she had it bathed frequently with cold vinegar and water, leaving the surface exposed to the air.

"In order to counteract this new state of things, she was bled six ounces and took a portion of castor oil.

"Dr James who had witnessed in the morning the difficulty with which the extraction of portions of the cranium was effected, was good enough to supply me with a complete set of Dr Davis's craniotomy forceps, and returned to the house in the afternoon to our assistance. These instruments were applied, but they were incapable of effecting so much as even the straight tooth forceps. The teeth of the instrument could not be made to penetrate the skull, although most accurately adjusted; and notwithstanding the handles were brought so nearly together, that the style on the one handle went quite to the bottom of the socket in the other, every attempt to extract with them resulted in the slipping of the bone out of the gripe of the instrument: a proof at once of the hardness of the bone, and of the impossibility of bringing it down in its then condition.

"Putrefaction now rapidly advanced as indicated by the odour of the discharges, and my only hope for the escape of the patient rested on the opinion, that she might be supported a few hours, until the softening of the tissues should enable me to draw down larger portions of bone by admitting of the pericranium and dura mater being peeled off with a finger nail, while the bone should be secured, and drawn down with the forceps or crotchet.

"But such was the unpromising state of affairs, that the poor creature resolutely refused to make any further effort to escape, saying she knew that she must die, and would rather die than exert herself any further, and begged in the most piteous tones that all further attempts to deliver her should be abandoned, yet expressing her thanks for the efforts that had been already made.

"She was, at times, slightly delirious. After explaining to her the increased facility which began to exist, from the rapid decomposition of the fœtus now going on, and endeavouring to reassure her with a promise to deliver her in the course of the night, she was again left to rest three or four hours under an anodyne draught. During the whole period that has now been spoken of, the anterior lip of the os uteri was behind the triangular ligament of the pubis, and the posterior low down beneath the promontory, and strangulated, as it were, or buttoned by the part of the head that lay on the strait and partly within it; yet so swelled that their inner surfaces continued nearly in contact, except when parted by the introduction of the fingers.

"The perineum seemed to have acquired no disposition to relax, notwithstanding all the handling to which the parts had been subject; and, excepting that the bones were more easily detached now than before, no greater comfort or facility was enjoyed by the operator now than at the commencement.

"At 10 P.M. I again met Drs Fox and Lukens, and the patient after much entreaty and argument resigned herself unwillingly to the further prosecution of our attempts to deliver. The remains of the head were still high up, but some of the broken edges came lower down. I got hold on a piece that descended behind the pubis, and with the tooth forceps pulled it downwards, detaching the membranes as it advanced, and found that it consisted of all the remainder of the right parietal bone. I next got away nearly the whole left parietal, and afterwards with the crotchet removed first the right, and then the left orbitar portion of the os frontis, which was all that remained of that bone. I then got away with the crotchet and forceps the right superior maxillary, and afterwards the left superior maxillary bone. I subsequently twisted off the greater part of the broad portion of the os occipitis, and the squamous parts of the temporal bones; so that I had nothing left now but the base of the skull and the lower jaw, which latter I left as a point on which to exert the tractions that were soon to be required.

"If the estimate made by all the gentlemen, that the strait was not more than two inches in its antero-posterior diameter should prove correct, I was fearful of meeting some difficulty in bringing the base of the skull, which was two and a half inches, through it; but when I had reduced the head so as to leave nothing more than the base of the skull and the lower jaw, I fixed a blunt hook into the latter, and with a finger to antagonise it, drew the mass down towards the point of the coccyx and had the satisfaction to find that it was now quite through the strait. My hand being now introduced into the vagina, I got a firm hold of the

neck, and with the exertion of the greatest strength, gradually brought the button-like remainder of the head out at the vulva, while the point of the thorax, of course, was entering the narrow pass. The head was delivered at a quarter after one o'clock, and having succeeded in effecting the most difficult and dangerous part of the operation, she got some ergot; and fastening a twisted towel round the neck of the fœtus I renewed the extractive efforts, which in twenty minutes enabled me to deliver the shoulders, and in twenty minutes more, the hips—the child being completely withdrawn at five minutes before two o'clock, which was forty minutes after the head was delivered.

"I found that, under the stimulation of the ergot, she was enabled to bear down very strongly considering her exhausted state, and at all events, the chief object of its exhibition was secured, viz. a firm contraction of the womb, and an effectual separation of the placenta, which came into the os uteri soon after the delivery.

"Large quantities of gas of the most putrid odour followed the extraction of the child, showing the enlargement of the womb, before spoken of, to have been owing to its extrication by the putrefactive processes going on in the uterine cavity.

"The cord was shrunk and black, and the placenta, which was also black, and filled with air, so as to crepitate under the fingers, was so horribly noisome that it was scarce possible to endure it during the requisite handling of it. No blood followed the placenta.

"The body was soft and putrid, being completely emphysematous and crepitating like the placenta. The cuticle was peeled by the pressure and friction.

"The child was rather above the medium size.

"After washing the poor creature with a sponge dipped in claret and water, and making her as dry and comfortable as possible, she got an anodyne and was left to rest, being unable to speak above a whisper, and with a pulse feeble but beating only 102 strokes per minute.

"The whole difficulty in delivering a child through so contracted a pelvis can scarcely be conceived of by one who has not been engaged in such an operation. The constant and perplexing apprehension of injuring the mother either with the instruments employed, or with the sharp and ragged edges of the bones which must be withdrawn, and sometimes violently broken off with the sharp tooth of the crotchet, involves the operator in the most painful and unremitted attention and watchfulness. The confusion also in the parts, arising from the remains of the scalp and the inner and outer membranes of the cranium blending themselves, as it were, with the os uteri, and covering and concealing the bones, is a source of great embarrassment, where those fibrous tissues retain so much firmness and compactness.

"Doubtless, could we have known that the woman could have been able to bear the fatigues of labour so long, we should have deferred the efforts at extraction for 24 hours after the perforation of the head; but such was not the opinion to be gathered from the actual phenomena.

"It has been seen that no great loss of time took place, after the softening of the tissues rendered it possible to break them up with some facility, whereas the process previously was exceedingly slow and tedious. The perforation was deferred as long as possible, which saved us from the dreadful and cruel operation of cephalotomy in a living fœtus. The child died from long continued pressure."

June 18th, (Saturday) 9 A.M. Our patient says she feels quite comfortable; had some sleep after we left; pulse 112, rather more feeble; skin moist, tongue slightly furred; clean linen, &c., was put on her, and she was moved up in bed. The bladder was emptied by the catheter; fomentations with flaxseed mucilage directed to be applied to vulva, the most perfect rest and quiet strictly enjoined; as diet, arrow root and oatmeal gruels, tea and toast.

Evening. Remains much the same, bladder again emptied, mucilages continued, an anodyne to be given at 10 P.M., if at all restless.

19th, 9 A.M. Passed a comfortable night, pulse 94, skin pleasant, tongue

slightly furred, lochia almost natural, free from pain, slight soreness over pubis to left side, directed warm brandy to be applied over soreness, a seidlitz powder to be given and repeated if necessary; continue other means.

Evening. Medicine not having operated, an enema of warm flaxseed mucilage was directed, and an anodyne at bed time.

20th. Rather restless in the early part of the night, enema operated freely, feels very comfortable, no pain, pulse 76, skin pleasant, tongue continues slightly furred, countenance good, spirits cheerful; continue as before.

23d. Our patient continues to do well, usually rests well at night, free from pain, although the soreness in uterine region continues, secretion of milk copious, feels so comfortable that she has taken an infant to nurse, pulse rather more frequent than natural; tongue clean and moist, bowels costive, passes urine without difficulty, the catheter was used three times daily till last evening, when it was found to be unnecessary, lochia serous; directed ol. ricini, one ounce. Mucilages to vulva to be continued, mucilaginous injections per vaginam, continue diet, and perfect rest in horizontal position.

From this time our patient continued rapidly to improve; in three weeks from the time of her delivery was so well as to be permitted to go down stairs, and in a short time resumed her ordinary avocations.

The subject of the preceding case is a native of Ireland, aged about 22 years, of small stature, not exceeding four feet and a half; is stated to have been a healthy child till her third year, when she received an injury by a fall, after which she was unable to stand or walk for two or three years; at the expiration of this time she regained her strength and was subsequently considered an active child. Upon examination, we found the femur and tibia of each extremity very much curved, forming a considerable arch forward; at the lower part of the spine, there was a cavity sufficiently large to admit the hand corresponding with the promontory of the sacrum internally; the bones of each arm partook of the general disease. It was evident she had in early life laboured under rickets.

46. *Diagnosis of Twins.*—In the *Review of the Medico-Chirurg. Trans.* at the commencement of this volume, and under the head of Physiology in the Quarterly Summary, will be found a notice of mediate auscultation as a means of detecting pregnancy. Dr Nagle, of Dublin, has published two cases in the Lancet, in which the existence of *twins* was clearly ascertained by the stethoscope, some time before parturition. We shall copy one case from the *Medico-Chirurg. Review* for April, believing that in many, probably not in *all* cases, double pregnancy may be thus recognized.

"On the 15th of October (1830), a female in her first pregnancy was admitted into the Lying-in-Hospital, Dublin. The abdomen was, in this case, so enlarged as to lead to the suspicion of twins. Having applied the stethoscope, a sheet being interposed between its extremity and the abdomen, I found a fœtal heart pulsating strongly, rapidly, and rather irregularly, midway between the umbilicus and the superior anterior spinous process of the *left* ilium. By a minute examination, I satisfied myself that the cylinder was applied immediately over the fœtal heart, with the rhythm of which I took particular care to make myself familiar. I next directed my attention to the other parts of the abdomen, still hearing the pulsations of a fœtal heart, until I came on a point where they were most distinctly audible. This greater distinctness of resonance, I found to be nearly under the linea semilunaris, between the umbilicus and the anterior inferior spinous process of the *right* ilium. The pulsations here, I immediately recognized to be weaker, less rapid, and less regular in rhythm, varying from 125 to 133 in a minute, whilst those on the left side varied from 160 to 170. The mother, labouring under a smart bronchitis, was occasionally attacked with a severe fit of coughing, during which the abdomen receiving a strong concussion, the pulsations of the fœtal heart on the right side were remarkably accelerated, whilst those on the left were scarcely at all affected. In order to draw a diagnosis, I compared, with as much accuracy as I was capable, the pulsations on both sides with each other, and then each separately with the impulse at the chest and the

pulsations at the wrist of the mother. The diagnosis was that there were twins; and I may add, that auscultation induced me to predict that the head of the second child would present." The event confirmed the diagnosis: the woman was delivered four days afterwards of twins, the *heads* of both presenting. There was a single placenta.

In another case, also at the Hospital, the existence of twins was detected, although the female was confident that the child was dead, as she had ceased to feel its motions.

47. *Partial inversion of the uterus.*—Dr H. S. Bellambe reports in the *London Medical Gazette*, that on the 30th of January 1831, he visited a young married lady who had been delivered twelve months before of her first child. The labour was tedious, but natural. The child being expelled, the placenta was pretty forcibly pulled down, and the extraction gave her much pain. Since that period, there was a constant sanguineous discharge, which resisted the usual remedies; the patient became debilitated, pale, and exsanguined. On examination, an inversion was discovered; the tumour formed a large spherical pouch, projecting considerably from the os tincæ, which remained in its proper position, so that the fundus having passed completely through the os uteri, remained strangulated by the cervix. It was very painful to the touch, and continually bleeding. M. Brown, surgeon, was called in consultation and succeeded in effecting the reduction by firm pressure upon the pouch, and pushing steadily upwards, while some support was afforded by the hand on the abdomen. The pain was excruciating, and the operation was difficult, from the long period of inversion, the great engorgement and strangulation about the cervix, and the extreme irritability about the parts. The hemorrhage ceased; some irritative fever succeeded, but by the 19th of February the patient was so far recovered, as to be able to return to her home in the country.

48. *Prolapsus and rupture of the uterus during labour.*—A case noticed by Dr Henschel of Breslau, and recorded in *Siebold's Journal. Archiv. General. Jan.* 1831. A female aged 30 years, the mother of several children, after her late confinements, suffered a prolapsus of the uterus, to which no attention was paid. She became pregnant, and at the end of the 8th month, labour commenced. It progressed regularly, but after some hours, the inferior segment of the uterus passed from the vulva, and presented between the thighs, a large cylinder, six inches long and two in diameter, terminating inferiorly by an orifice with very thick edges, thinner towards the pubis, and presenting on its surface many livid spots.

The head of the child presented at the vulva, and the strong and rapid pains would have quickly effected a delivery, if an insurmountable resistance had not been opposed by the large portion of prolapsed uterus. Dr Henschel applied the forceps, and thus drew the head to the orifice of the uterus, but at this moment a rupture commenced at the superior part of the uterus, and, although the forceps were immediately removed, it was continued by the passage of the head. The child, although born alive, soon perished. The placenta being removed, the inferior portion of the uterus contracted, but still remained of considerable magnitude. The reduction of the uterus was immediately effected. The rupture was at the superior margin of the cervix uteri, and at first was half an inch in length; but it immediately diminished in consequence of the contractions, and eventually no trace of it remained. The consequences were at first somewhat threatening; the torn segment did not completely contract before the 8th day, and a purulent matter flowed with the lochia. The patient could, however, leave her bed on the 10th day, and at the end of the month was perfectly restored.

49. *Cesarean operation.*—In the *Archiv. Generales* for February, is a notice of a Thesis published at Paris by M. Jolly, in which the author records the experience of his father, a surgeon at Chateau-Thierry, who has six times performed the cesarean section. In all the cases, labour had lasted for forty-eight hours,

and the waters had been evacuated. In one case only, the female had not been fatigued by vain attempts at delivery. The incision was always made on the middle line, between the umbilicus and the symphysis pubis, and the uterus was cut in the same direction on its anterior surface. No hemorrhage followed, and rarely were more than two ounces of blood lost. Gastro-raphe was always resorted to, and far from causing the accidents which have been referred to it, it has always had the most happy influence on the prompt cicatrization of the wound. In two cases, not the least accident supervened, and the cure was perfect before one month; in two others, an active inflammation in the abdomen was successfully resisted by leeches (saignées), baths and emollient fomentations; in the two last cases, the patients sunk into a metro-peritonitis; one on the fourth day, the other after a longer interval, at a time when every hope was entertained of a cure by antiphlogistics; death was caused by indigestion.

Four infants were preserved: two others were dead when the operation was performed; before they had been considered as alive. No hernia supervened as a consequence of the operation; but there was always a prominent line corresponding to the cicatrix, which was from three to six inches in length.

These statements, the truth of which there is no reason for doubting, should be remembered, as this operation in France is said to have been fatal in the proportion of one to two, and in England, almost every case has terminated unfavourably. In Germany, success is much more general, as may be observed by referring to the Quarterly Summary in the preceding volumes of this Journal. The causes of this difference have been stated and perhaps truly as depending not on the dangers of the operation considered by itself, but on the varying condition of the system of the mother. In Germany, the section is made as soon as it is ascertained that a deformity exists sufficiently great to prevent the delivery of a living child, provided the child be alive; while in England, it is the last resource of the practitioner who has exhausted the vital powers of his patient by abortive and injurious attempts at delivery, and then when she is almost in articulo mortis, ventures on this severe operation.

IX. CHEMISTRY.

50. *Solid Perchloric Acid.* M. Serullas recently stated to the French Academy, that, being occupied with some combinations of perchloric (oxychloric) acid with the vegetable alkalies, he ascertained that it formed with many of them perfectly crystallizable salts. This circumstance led him to suppose that this acid might exist in a concrete form. To determine this point, he distilled perchloric acid with three times its weight of concentrated sulphuric acid. The mixture, being heated to ebullition, caused a disengagement of chlorine which gave a yellow colour to the liquid, and of perchloric acid vapour, which, being conducted through a tube surrounded by ice, was partly condensed into a crystallized solid and partly into a liquid. The crystals did not contain sulphuric acid, as the heat was not sufficient to raise that acid in the distillation. They had the form of transparent prisms. Exposed to the air, they emitted dense white vapours. The liquid part when dropped into water caused a sound similar to that occasioned by a red-hot iron dipped in that liquid, and when exposed to the air in a watch-glass, one part volatilized so quickly as to cause the solidification of the remainder. M. Serullas was unable to determine whether the acid, in the state in which he obtained it, is anhydrous.—*Journ. de Chim. Med. Avril* 1831.

51. *Iodide of Lead.*—M. Caventou, having received a formula for an ointment of iodide of lead, was induced to undertake the preparation of this new medicament. With this view, he made two solutions, one of a 100 parts of iodide of potassium; the other, of 75 parts of acetate of lead. The two solutions were mixed, and a handsome yellow precipitate was immediately formed. This precipitate was received on a filter, washed, and drained; but as time press-

ed, M. Caventou performed the washing with boiling water, being led to take this course by the reputed insolubility of the iodide of lead. It was with much surprise, however, that he observed that the washings, upon cooling, deposited brilliant micaceous scales, of a rich golden yellow colour. The scales proved to consist of iodide of lead; so that it is a mistake to suppose that this iodide is insoluble in water.—*Journ. de Chim. Med. Avril* 1831.

52. *New Process for preparing Medicinal Prussic Acid.*—Mr W. Thomas Clark has given, in the *Glasgow Medical Journal*, the following process for preparing prussic acid, for medicinal use, which has the merit, he conceives, of furnishing a product always of uniform strength. Take of tartaric acid 72 grains, cyanuret of potassium 32 grains, distilled water an ounce; dissolve the tartaric acid in the water, contained in an ounce-vial; then add the cyanuret of potassium, and close the vial with a cork or stopper, which must for a short time be retained in its place with the finger. In the mean time, agitate the vial while immersed in cold water, in order to carry off the heat produced in the process. When all action has ceased, set the vial aside in a cool and dark place, for twelve hours, in order that the precipitate formed (bitartrate of potassa or cream of tartar) may subside. Afterwards decant the clear liquor, and preserve it in a cool and dark place.

The rationale of this process is as follows:—Cyanuret of potassium, immediately on dissolving, becomes, by combining with the elements of water, the prussiate or hydrocyanate of potassa. This salt is then decomposed by the tartaric acid, which precipitates the potassa in the form of the sparingly soluble bitartrate, while the prussic acid is set free. A small portion of the bitartrate remains dissolved in the prussic acid; but this is so inconsiderable as to be of no kind of consequence.

Dr Turner, on the authority of Robiquet, gives the following process for preparing cyanuret of potassium:—Expose ferrocyanate of potassa in a crucible to a long-continued red heat, by which means the ferrocyanic acid is decomposed, and a dark mass remains, consisting of cyanuret of potassium, mixed with charcoal and iron. By treating this with water, the cyanuret of potassium is dissolved from the charcoal and iron, and may be obtained by evaporation to dryness. This cyanuret acts on the animal system in the same manner as hydrocyanic acid, and has been recommended by Robiquet and Villermé for employment in medical practice as a substitute for the latter, as being of more uniform strength, and less prone to decomposition than the acid.

Mr Clarke recommends the following more detailed process for obtaining the cyanuret. Heat the ferrocyanate of potassa of commerce moderately, reduce the residue to a fine powder, and heat again. By this exposure to heat, the salt will lose three equivalents of water, and be converted into a white ferrocyanuret of potassium, consisting of one equivalent of cyanuret of iron and two equivalents of cyanuret of potassium. The double cyanuret, to the amount of from forty to eighty ounces, is then put into an iron mercury bottle furnished with a gun barrel and flexible tube, which is to dip under water, and subjected to a smart fire, so long as any gaseous matter is evolved. At this temperature, the cyanuret of iron is decomposed, being resolved into gaseous products, charcoal, and iron, and the cyanuret of potassium remains unaffected. This is then dissolved out by water, and obtained from its solution by evaporation. As it is a deliquescent substance, it should be kept in well stopped bottles. If pure, its solution will not strike a blue colour with a persalt of iron.

MISCELLANEOUS.

State of Medicine in Spain.—From a very excellent review contained in

the last number of the *Foreign Quarterly* for July 1831 of Dr Faure's "*Souvenirs du midi, ou l'Espagne telle qu'elle est sous ses pouvoirs religieux et monarchiques*," we copy the following account of the state of medicine in Spain.

Medicine is in a most degraded and despicable state in Spain; and it is necessary, it seems, that it should continue so, in order not to give umbrage to the clergy, with whom it comes constantly in contact in the bosom of families and at the bedside of the dying. Besides, being considered as leading insensibly to materialism, it has been conceived essential to the interest of religion and its ministers, that this science should be kept down—an object which has been most effectively accomplished. In Spain, physicians and surgeons are in general poor devils, fellows without substance or fortune, who make visits for a fee of ten pence each, or even less, and who, alike ignorant and disreputable, are despised even by those who think it necessary to require their attendance. Throughout the whole country may be read on every sign-post to which a barber's basin is attached, the words *cirujano y comadron*, surgeon and accoucheur; to obtain which grade it is necessary to commence with attendance on infirmary practice in the hospitals, to pass through certain courses, to undergo some sham examinations, and, above all, to pay for a license. Dr Faure, during his stay at Madrid, was served by two aspirants to this honour, who, he assures us, made excellent valets, and reminded him of the great prototype of the race in more respects than one. There are, besides, doctors in the two branches of medicine and surgery, who treat internal maladies, operate upon occasion, though always unskilfully, and fill important situations, particularly the chairs of instruction.

There is not a man in Spain who has established a reputation as an anatomist. How could there be? Actual dissection is impracticable; an attempt to procure subjects would raise an insurrection, and he who made it would infallibly be assassinated. Madrid does not possess a single good anatomical preparation; and with respect to the collection of wax models in the College of San Carlos, of which the Spaniards are so ignorantly proud, even if it were more extensive and complete than it actually is, it could never serve as a substitute for dissection, or enable any one, without other means of instruction, to operate safely, not to say skilfully, on the human body. Physiology has naturally, or rather necessarily, shared the fate of anatomy; and at a time when it has been receiving vast accessions from the labours of the learned in other countries of Europe, the Spaniards have literally contributed nothing to its progress. They boast, indeed, of having illustrated medical jurisprudence; and, certainly, a number of works have been produced on this subject. But in judging of the value of these treatises, and of the credit due to them, respect must be had to the state of medical science in the country where they appeared, and to the comparative ignorance of chemistry, anatomy and physiology, which prevails almost universally among the medical profession of Spain. The knowledge of the obstetric art, which is considerable, has been imported chiefly from France; but there is no good native treatise on this subject; and, indeed, with the exception of Arejula's work on the Yellow Fever, and that of Luzuriaga on the Madrid Colic, we scarcely know of any medical book of Spanish origin which is considered authoritative in other countries; and the last of those just named Dr Faure considers, apparently with justice, as after all but a poor performance. The system of Brown is that according to which the Spanish physicians almost universally prescribe; and if we may credit Dr Faure, they lavish incendiary remedies with a profusion which, in the ardent climate of Spain, must be singularly calculated to keep up the ancient alliance between Death and the Doctor. We may add, that the general hospital at Madrid deserves to be cited as a model of a Spanish hospital, by reason of the filth and disorder which prevail in it. The part allotted to the military is a den of pestilence and death.

The University of Medicine, like that of Law, has been removed from Madrid. It is true that the hospitals and the courts of justice, where students of

medicine and law can alone learn the most valuable part of their professions, are all in the capital; but what does that signify in Spain, where knowledge forms no title to distinction, and is more likely to entail persecution than to lead to honour? Accordingly, with the wisdom peculiar to this country, both universities have been removed to the little town of Alcala de Henares, where there are neither hospitals nor courts, and where it is necessary to study in order to take the degree of Doctor in either profession. The students too form a wretched crew, with their black capas hanging in tatters, their naked feet covered with rags, and their lank, greasy, unwashed countenances, expressive of pride, insolence, and misery. The greater part of these tatterdemalions have no other means of subsistence than the soup which is charitably furnished them at the gates of the convents, and the alms which they beg in the streets, where some of them are at all times to be found bawling out, "*una limosna para un poure estudiante*," an alms for a poor student; words which, as the "Young American" observes, they utter in a tone and manner that seems to say, "An alms, and be d——d to you!"

Diseases of Spain.—From the same source as the above, we obtain the following notice of the diseases peculiar to Spain.

Of the diseases peculiar to Spain, some are local and others general. To the former class belong the yellow fever, which occasionally commits such dreadful ravages on the coast; and that peculiar affection of the eyes, frequently terminating in blindness, which is so common in the central region of Spain. Blindness is the peculiar curse of the whole of this region, particularly the capital, and is by no means confined to the lower classes; many people in the middle and higher walks of life being also afflicted with this melancholy deprivation. "I was so much struck with the number of blind in Madrid," says the author of *A Year in Spain*, "as to seek a cause for it in the ardent energy of the sun in this cloudless region, combined with the naked and unsheltered condition of the country." (vol. 1. p. 323.) According to Peyron, the evil is attributable to an intemperate use of phlebotomy, a practice which is scarcley less prevalent amongst the Spaniards of the present day, that it was amongst their ancestors in the time of Sangrado; at least, if one may judge from the number of persons whose business it is to draw blood, for every street of every town in Spain has its barber, and every barber is a regular phlebotomist. But Dr Faure proposes a different and more scientific solution.

Madrid, situated on a plateau elevated more than 1800 feet above the level of the sea, is in the most irritating atmosphere of all Spain. The wind which blows there, during almost the whole year, from the mountains of Guadarrama, and the fatal effects of which have given rise to so many proverbs, penetrates with an insupportable cold which would affect the strongest lungs, if they were not protected by the skirt of the cloak thrown over the shoulder, as well as adds to the influence of the climate in producing the most painful colics in a great number of foreigners. It is this wind, blowing so frequently, and sometimes so violently, from the month of February to the month of May, which incessantly raising in the air columns of *nitrous powder*, irritates the eyes of a population tainted with scrofulous and venereal affections, and gives rise to those ophthalmias which, from the reverberation of the sun and the coldness of the nights, are sure in no long time to terminate fatally.—Nor is it merely at Madrid that this affection is remarkable; diseases of the eyes and loss of sight are common to the whole of Spain, judging by what one observes as far as Cadiz; because the irritating atmosphere of the Peninsula is generally very much agitated, and the heat of the solar rays is scarcely tempered by any verdure, of which indeed several provinces are entirely destitute.

In short, ophthalmia in Spain is produced by the same causes as in Egypt, namely, by an impalpable nitrous dust, which, lodging in the eyes, creates in-

flammation; and this again is aggravated by the incessant alternations of intense heat during the day, and chilling cold during the night. The Madrid colic is also an effect of the climate, and always dangerous, often fatal to strangers, who learn, sometimes when it is too late, to take the native precaution against the cold blasts which sweep down suddenly from the Guadarrama mountains, and instantly checking a profuse perspiration, engender this grevious malady. The variolous infection is always more dangerous in summer than in winter, particularly in the central region of Spain; but vaccination, which is now generally practised throughout the kingdom, has tended greatly to abate its virulence. Scarlatina is rare, and by no means dangerous. But there exists an analogous affection, called by the natives *garrotillo*, and known to medical men as gangrenous angina, which sometimes becomes a contagious epidemic, and rages for a season like a pestilence.

"This disease," says Dr Faure, "is frequent in the Peninsula, and we learn from the works which give an account of the epidemic disorders which have affected Spain at different epochs, that it has been familiar there for many centuries, notwithstanding the purity and dryness of the atmosphere, and possibly owing to that very cause."—p. 74.

Another gangrenous malady common in Madrid and in several of the provinces, particularly Andalusia and Catalonia, is *hospital putrefaction*, which, if not endemic, may at least be considered almost inevitable in the hospitals towards the end of summer. At this period the most trifling sores become dangerous ulcers, and very frequently prove fatal. Acute and chronic inflammations of the lungs are also common, and, in the capital particularly, advance with great rapidity to a crisis. Pulmonary consumption is of very frequent occurrence; indeed the tendency towards this disease is constant in some parts of Spain; and, what is not a little remarkable considering the dryness of the air, intermittent fevers generally make their appearance about the beginning of June, when the heat becomes intense. Scrofulous disorders are as common in Spain as in Russia, and even more so; nor is it unusual to meet with mendicants having one or both legs affected with elephantiasis. Cases of epilepsy are by no means rare; whilst hysteria and St Guy's dance (chorea) are frequent in the southern provinces, where the heats are fiercest.

The diseases of the mind, or madness, ought to be proportionably greater there than elsewhere, on account of the action of the sun upon the head, and the want of agreeable occupation under a government, which, by constantly thwarting the reason, keeps the whole population in a state of habitual irritation: And such is unhappily the fact. But it has been found that the prevailing religious notions stamp insanity with a peculiarly sombre and malignant character among the Spaniards. There are three principal establishments for insane persons in Spain; one at Toledo, one at Valencia, and the third at Zaragoza. There is a fourth at Cordoba, but it has been for some time deserted.

Comparative View of the Population of the City and County of Philadelphia.—We derive the following from Hazard's Register of Pennsylvania, Vol. VIII, No 5, a work which we would desire to see more extensively circulated.*

"The following table exhibits several views of the white population of the city and county, according to the census of 1830.

"The first column shows the numbers and sexes at the different ages, and the second gives the proportion of the sexes to each other; the third column exhibits the proportion of each sex at the different ages, to the whole number of each sex; the fourth column furnishes the relative portion of the whole white popupopulation at each age.

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* Terms Five Dollars per annum. Published in weekly numbers of 16 pages, quarto.

AGES.	Population of whites in the city and county, according to census of 1830, at the different periods of life.			Proportion of each sex, at each age.		Proportion of each sex, at the respective ages, to the whole number of that sex.		Propor. of the whole at each age, to the wh'e pop. of city and county.
	Males.	*Fem.*	*Total.*	*Males.*	*Females.*	*Males.*	*Females.*	
Under 5 years of age	12941	12414	25355	100	95.92	1 to 6.45	1 to 7.24	1 to 6.83
From 5 to 10	10804	10597	21401		98.08	7.73	8.47	8.09
10 to 15	9271	9793	19064		105.63	9.01	9.17	9.09
15 to 20	10346	11306	21652		109.28	8.07	7.94	8.00
20 to 30	17547	19334	36881		110.12	4.75	4.64	4.70
30 to 40	11063	11897	22960		107.53	7.53	7.54	7.54
40 to 50	6132	6730	12862		109.75	13.62	13.34	13.47
50 to 60	3112	4068	7180		130.72	26.84	22.07	24.14
60 to 70	1573	2394	3967		152.19	53.10	37.51	43.69
70 to 80	551	961	1512		174·41	151.60	93.45	14.64
80 to 90	167	268	435		160.48	500.21	335.10	398.54
90 to 100	26	40	66		153.84	3212.92	2245.22	2626.43
100 and upwards	3	7	10		233.33	27845.00	12829.85	17334.50
	83,536	89,809	173,345		107.50			

From this table it appears that the proportion of the males to the females, was an average of 100 of the former to 107.50 of the latter—that at the first two periods, there was an excess of *males*—that from 10 to 30 there is a regularly increasing excess of *females*, which again diminishes between the ages of 30 and 40, and then again rises between 40 and 50—from 50 to 60 the excess of females becomes very considerable and rapidly increases till between 70 and 80—from this period until 90 and 100, there is a gradual decrease, but beyond 100 years, the population becomes as 100 males to 233.33 females, thus showing that from the period of 50 years longevity is very much in favour of the females—especially, in the latter periods of life. The whole number of the males beyond 50, is 5432 or 1 to 15.37 of the whole number of males; 7738 females, or 1 to 11.60 of the whole number of females—the two together being 7.59 per cent of the whole white population upwards of 50 years of age. Beyond the age of 70, there are only 747 males or 1 to 111.83, of the 83.536 males, and only 1276 females or 1 to 70.37, of the 89.809 females, or 2023 of both sexes beyond the age of 70 years, being only about 1.16 per cent of the whole white population.

Ages of Coloured Population of City and County.

Previous to the census of 1820, the ages of this class are not given. The census of 1790, 1800, and 1810, did not distinguish the coloured from other persons not taxed. We have, therefore, no points of comparison beyond 1820.

In 1820, there were

Under 14 years	1813 males,	1814 females.	1 excess.
From 14 to 26	1030	1844	814
26 to 45	1746	2181	435
45 and upwards	628	828	200
Total,	5217	6667	

At the age of 14, the males and females were equal—while that of whites at 16 (the nearest analogous age), was in favour of the females from 5 to 13 per centum. The number *under* 14, of males to the whole number of males, was as 1 to 2 82, and females as 1 to 3.67, and to the whole coloured population as 1 to 3.30.

Between 14 *and* 26, the males were 100 to 179.03 females—the proportion of the whites, *from* 16 *to* 26, was 100 to 109.86, excepting in 1820, when it was 100 to 121.37. The proportion of those, between 14 and 26, to the whole of

each sex, was as 1 to 5.16 for males—and 1 to 6.47 for females—and to the whole coloured population, as 1 to 4.17.

From 26 to 45, there were males 100 to 124.91 females—proportion of whites at those ages 100 to 109.36. The proportion to the whole of each sex 1 to 3.45 for males—1 to 3.05 for females—and to the whole population as 1 to 3.05.

At 45 and upwards, there were 100 males to 131.85 females—the whites, at same ages, 100 to 123.26. The proportions to the whole sex as 1 to 8.46 for males—1 to 8.05 for females—and to the whole population as 1 to 8.23.

In 1830, the number of males above 55, 408, and females 535, or 100 males to 131.12 females. The males above that age being, to the whole number of males, as 1 to 16.40; and the females, to the whole number of that sex, as 1 to 16.45; and both, to the whole coloured population, as 1 to 16.53.

The number of persons *above* 100 is 27, viz. 14 males and 13 females; or, in proportion to the whole coloured population, as 1 to 577.59.

—

COMPARISON WITH THE WHITES.

Under the age of 10, the whites were to the whole population as 1 to 3.70—coloured were as 1 to 4.58.

Above the age of 50, the whites were as 1 to 13.16—above the age of 55, the coloured were as 1 to 16.53.

Above the age of 100, the whites were as 1 to 17.334.
100, coloured 1 577.59.

Showing an extraordinary difference in longevity, on the side of the coloured population; and that, while in the case of the whites, it is in favour of the females as 2.33 to 1; in the coloured it is as .92 to 1—or, in the former, 100 males to 233.33 females, and, in the latter, as 100 males to 92.08 females.

The following table presents a view of the coloured population, in 1830, similar to that of the whites.

AGES.	Coloured population of the city and county, according to the census of 1830, at the different periods of life.			Proportion of males to females at each age.		Proportion of each sex, at the respective ages, to the whole number of that sex.		Propor. of the whole at each age, to the col'd pop. of city and county.
	Males.	*Fem.*	*Total.*	*Males.*	*Females.*	*Males.*	*Females.*	
Under 10 years of age	1658	1747	3405	100	105.36	1 to 4.09	1 to 5.03	1 to 4.58
Between 10 and 24	1772	2764	4536	100	155.98	1 3.82	1 3.19	1 3.43
24 36	1792	2405	4197	100	134.20	1 3.79	1 3.66	1 3.71
36 55	1162	1352	2514	100	116.35	1 6.00	1 6.58	1 6.20
55 100	394	522	916	100	132.48	1 17.21	1 16.86	1 17.02
100 and upw'ds	14	13	27	100	92.85	1 485.14	1 677.15	1 577.58
	6792	8803	15595	100	129.46			

Decrease by deaths, and increase by births.

In 1810, the population of the districts included within the bills of mortality (viz: the City, Northern Liberties, Penn Township, Kensington, Southwark, Moyamensing, Passyunk and Blockley, was 98,282, and the deaths, deducting still born, were 1897 or 1 in 51.80. In 1820, the population was 121,980, deaths 3189 or 1 in 38 25, and in 1830 the population (less Blockley) 167,811, deaths 3948 or 1 in 42.50.

The whole number of *deaths* in the 10 years from 1820 to 1830 was 40,506, viz: 34,044 whites, and 6462 coloured, males 22,360, females 18,146, or 100 males to 81.15 females.

The whole number of *births* in the 10 years from 1820 to 1830 was 64,637, viz: males 33,569, females 31,068, or 100 males to 92.54 females—colour not designated.

The deaths were to the births in those 10 years as 100 of the former to 159.56 of the latter, or as 1 to 1.59.

In both cases, still born are included. For several years a small portion is designated "sex unknown"—in the above calculation, we have appoined them in each year by those of the same year of which the sexes were ascertained.

The difference between the births and deaths in the 10 years is 24,131, which, if they are correctly reported, shows *that* to be the *natural* increase, which taken from the total increase viz: 47,044, will leave 22,913 to have been supplied from abroad, from the country, or from other cities. The natural increase, therefore, and that from migration was nearly equal, or 100 from the former source for every 94.95, from the latter.

The increase, in the ten years, of those districts was

	Males	Females
	22,854	24,190
Increase by births,	11,209	12,922
Showing the increase from the other sources was composed of	11,645	11,268

Or only a small difference of males more than females.

The following table shows a comparative view of the births and deaths in the 10 years from 1820 to 1830.

BIRTHS.

	Sexes.			Still born.	Proportion of still born to births.	Proportion of sexes to each other.	
Years.	*Males.*	*Fem.*	*Total.*			*Males.*	*Females.*
1821	2630	2417	5047	211	1 in 24	100	91.93
1822	3021	2701	5722	257	22	100	89.40
1823	2977	2836	5813	228	25	100	94.59
1824	3062	2771	5833	215	27	100	90.49
1825	3444	3182	6626	273	24	100	92.39
1826	3526	3214	6740	306	22	100	91.15
1827	3581	3452	7033	286	24	100	96.39
1828	3694	3506	7200	321	22	100	94.91
1829	3638	3357	6995	293	24	100	92.29
1830	3996	3632	7628	302	25	100	90.89
	33569	31068	64637	2692	1 in 24	100	92.54

DEATHS.

	Sexes.			Proportion of sexes to each other.		Number of deaths of each colour.		Proportion of Whites to Blacks.		Excess of births over deaths.	Proportion of deaths to births.
Years.	*Males.*	*Fem.*	*Total.*	*Males.*	*Fem.*	*White.*	*Black.*	*White.*	*Black*		
1821	1824	1348	3172	100	73.90	2486	686	100	27.59	1875	1 to 1.59
1822	2097	1494	3591	100	71.24	3031	560	100	18.47	2131	1 1.59
1823	2492	2108	4600	100	84.59	3800	800	100	21.05	1213	1 1.26
1824	2365	2034	4399	100	86.00	3696	703	100	19.02	1434	1 1.32
1825	2093	1719	3812	100	82.13	3317	495	100	14.92	2814	1 1.73
1826	2201	1950	4151	100	88.59	3622	529	100	14.60	2589	1 1.62
1827	2178	1767	3945	100	81.13	3188	757	100	23.74	3088	1 1.78
1828	2370	1922	4292	100	81.09	3586	706	100	19.69	2908	1 1.68
1829	2330	1964	4294	100	84.29	3651	643	100	17.61	2701	1 1.63
1830	2410	1840	4250	100	76.34	3667	583	100	15.92	3378	1 1.79
	22360	18146	40506	100	81.15	34044	6462	100	27.99	24131	1 to 1.59

Within the last 10 years there have died 40,506 at the following ages.

Under 1 year deducting Still born,		8,570	Propor. of 1000. 226.03
Between	1 and 2	3,291	86.80
Between	2 and 5	2,793	73.66
Between	5 and 10	1,479	39.01
Between	10 and 15	712	18.7[illegible]
Between	15 and 20	1,144	30.1[illegible]
Between	20 and 30	4,543	119.8[illegible]
Between	30 and 40	4,738	124.97
Between	40 and 50	3,733	98.46
Between	50 and 60	2,630	69.36
Between	60 and 70	1,932	50.96
Between	70 and 80	1,352	35.66
Between	80 and 90	746	19.68
Between	90 and 100	214	5.64
Between	100 and 110	32	.85
Between	110 and 120	5	.13
		37,914	1000.00

Or more than one-fifth under the age of one year.
Or nearly one-half under twenty years.
Nearly a fourth between twenty and forty.
More than a fifth between forty and seventy.

At the census of 1830 there were 44,402 persons within the limits of the bills of mortality, under the age of 10, of both sexes and colours, and there died 1821 (excluding still born), which was at the rate of 4.10 per cent on the population within that age.

As the ages of the coloured population are not given after 10 years, precisely in the same manner as the whites, we are compelled, in order to pursue the calculation, to take the nearest ages for that portion—it can be, therefore, merely an approximation to correctness.

Between 10 and 20, there were 35,573 whites, and between 10 and 24, there were 4550 coloured, together 40,123; and there were between the ages of 10 and 20,175 deaths or .43 per cent on the population.

Between 20 and 30, there were 32,990 whites; and betweer 24 and 36, 3978 coloured—total 36,968; there were 488 deaths between the ages of 20 and 30, or 1.32 per cent on population.

Between 30 and 50, there were 31,844 whites; and between 36 and 55, 2377 coloured—total 34,221; there were between the ages of 30 and 50, 810 deaths, or 2.37 per cent on the population.

Between 50 and 100, there were 11,216 whites; and between 55 and 100, 845 coloured—total 12,061; there were 652 deaths between the ages of 50 and 104, or 5.40 per cent on population.

Above the age of 100, there were 37 whites and coloured, and there were 2 deaths at that age, or 5.40 per cent on population.

Under	10	4.10	on population.
Between	10 and 20	.43	do.
Between	20 and 30	1.32	do.
Between	30 and 50	2.37	do.
Between	50 and 100	5.40	do.
Above	100	5.40	do.

In volume I. page 116 of the "American Journal of Medical Sciences" will be found a very interesting essay, and numerous tables, on the medical statistics of Philadelphia, in 1827, by Governeur Emerson, M.D.

UNIVERSITY OF PENNSYLVANIA.

Dr Philip Syng Physick has resigned the chair of anatomy in the medical department of the University of Pennsylvania. The justness of the following compliment to this distinguished individual on the part of the Trustees, will be universally admitted by the members of that profession, which he has contributed so much to elevate by enlarging its sphere of usefulness.

"At an adjourned meeting of the Trustees, held October 21, 1831, the following report was made, and the resolution attached thereto adopted, with instruction to the secretary to communicate a copy of the same to Professor Physick, and to the medical faculty.

"The committee to whom was referred, on the 14th inst., the resolutions of the medical faculty, respecting the resignation of Professor Physick, fully coinciding with the views and feelings expressed by the faculty, beg leave to recommend to the Board of Trustees the adoption of the following resolution:

"*Resolved*, That in consideration of the important services rendered to the medical department of the University by Professor Philip Syng Physick, in the chair of surgery as well as of anatomy, during a period of twenty-six years, and for the purpose of continuing his connexion with the school, to the fame and usefulness of which he has so largely contributed, there be conferred on the said Philip Syng Physick, the honorary appointment of Emeritus Professor of Surgery and Anatomy in this University. From the minutes.

Signed, JAMES C. BIDDLE, Secretary, &c."

Doctor William E. Horner has been elected professor of anatomy in the University of Pennsylvania, in place of Doctor Physick, resigned. The reputation which Dr Horner has won for himself, as a learned and indefatigable teacher and writer of anatomy, needs not additional publicity from us.

PHILADELPHIA MEDICAL INSTITUTE.

The course of lectures for the summer term in the Medical Institute begins on the first Monday in April, and is continued until the first of November. The month of August is a vacation. The winter examinations of the subjects lectured on in the University of Pennsylvania are conducted by Drs JACKSON, BELL, MITCHELL, HODGE and HARRIS, with such commentaries and illustrative remarks as are deemed proper.

N. CHAPMAN, M.D., on the Practice of Medicine. WILLIAM E. HORNER, M.D., on Anatomy. WILLIAM P. DEWEES, M.D., on Midwifery. SAMUEL JACKSON, M.D., on Materia Medica. JOHN BELL, M.D., on the Institutes of Medicine and Medical Jurisprudence. J. K. MITCHELL, M.D., on Chemistry. H. L. HODGE, M.D., on the Principles of Surgery. THOMAS HARRIS, M.D., on Operative Surgery.

PHILADELPHIA ASSOCIATION FOR MEDICAL INSTRUCTION.

JOSEPH PARRISH, M.D., Practice of Medicine. FRANKLIN BACHE, M.D., Chemistry. JOHN RHEA BARTON, M.D., Surgery. GEO. B. WOOD, M.D., Materia Medica. SAMUEL GEORGE MORTON, M.D., Anatomy.

The winter course of examinations on the various branches of medicine will commence on the third Monday in November, and be continued till the first of March.

The examinations on Midwifery will be conducted by CHARLES D. MEIGS, M.D.

GREGORY'S PRACTICE OF PHYSIC.—NEW EDITION.

A new edition of the Practice of Physic, by Dr Gregory, from the last London edition, with Notes and Additions, adapted to the Practice of the United States, by Dr Potter, Professor of the Practice of Physic in the University of Maryland, and Dr S. Colhoun of this city, is just published by Towar, J. & D. M. Hogan, No. 255 Market street.

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